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FINAL ENVIRONMENTAL IMPACT STATEMENT FOR DISPOSAL AND REUSE CNC
CHARLESTON SC
6/1/1995
NAVFAC SOUTHERN

**Final Environmental
Impact Statement for
Disposal and Reuse of the
Charleston Naval Base**

June 1995

Prepared for:

DEPARTMENT OF THE NAVY

Abstract

FINAL ENVIRONMENTAL IMPACT STATEMENT DISPOSAL AND REUSE OF THE CHARLESTON NAVAL BASE NORTH CHARLESTON, SOUTH CAROLINA

Lead Agency: U.S. Department of Navy

Title of Proposed Action: Disposal of excess property and subsequent Reuse/Redevelopment of the former Charleston Naval Base.

Affected Jurisdiction: City of North Charleston, Charleston County, Dorchester County, and Berkeley County

In accordance with the 1993 Base Closure and Realignment Commission recommendations, the Charleston Naval Base will be closed on April 1, 1996. The proposed action, as addressed by this Final Environmental Impact Statement (FEIS), is the disposal and subsequent reuse and redevelopment of the Charleston Naval Base. This FEIS includes analysis of the potential impacts that the proposed Alternative Reuse Scenarios may have on the local community including land use and aesthetics, terrestrial and aquatic environment, water quality, wetlands, transportation, air quality, noise, socioeconomics, infrastructure, community services, cultural resources and environmental contamination.

Beneficial impacts associated with implementation of Alternative Reuse Scenario 3, including Concepts 3, 3A, and 3B, would include creation/retention of employment, increased availability of recreational activities, and use of facilities by local community service organizations. Potential adverse environmental impacts would include impacts to wetlands, threatened species, storm water runoff, water quality, air quality and municipal services. Mitigation measures can be employed to reduce potential impacts to insignificant or acceptable levels. Historical and archaeological resources would be protected via a Memorandum of Agreement (MOA) and protective covenants. Remediation of environmental contamination will continue to be the responsibility of the Navy.

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Executive Summary

Type of Report

This document is a Final Environmental Impact Statement (FEIS). This FEIS has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA); the Council on Environmental Quality Regulations on Implementing NEPA Procedures (40 CFR 1500-1508); the *Environmental and Natural Resources Program Manual*, Chief of Naval Operations Instruction, (OPNAVINST) 5090.1A (Chapter 5); and the Defense Base Closure and Realignment Act of 1990 (Title XXIX, of P.L. 101-510, "National Defense Authorization Act for Fiscal Year 1991") as amended by P.L. 102-190 and P.L. 102-484.

Description of the Proposed Action

In accordance with the 1993 Base Closure and Realignment Commission (BRAC-93) recommendations, the Charleston Naval Base will be closed. Operational closure of the Base will officially take place on April 1, 1996. The proposed action, as addressed by this FEIS, is the disposal of surplus Navy property and subsequent reuse and redevelopment of the property. A Preferred Alternative Scenario has been prepared by the Building Economic Solutions Together (BEST) Committee (32 CFR 91.7[C][i]). This scenario, which envisions full redevelopment of the Base by the Redevelopment Authority, is outlined in detail in the *Charleston Naval Complex Reuse Plan* prepared by BEST and approved by BEST on May 12, 1994 and by the Charleston Naval Complex Redevelopment Authority on August 24, 1994. Following the DEIS public review and comment process, actions were taken by the City of North Charleston and the Redevelopment Authority that required a new alternative plan be developed and considered in the FEIS. This new concept is referred to as Scenario 3B.

Alternative Reuse Scenario 3, which has been identified as the Preferred Alternative Scenario, includes three development concepts, the first of which is the conceptual reuse plan as developed by the BEST Committee. The second concept is referred to as Scenario 3A, and the third concept is referred to as Scenario 3B. For the purposes of the EIS, and as requested

by the Redevelopment Authority, all three development concepts collectively comprise Alternative Reuse Scenario 3.

Alternatives

This FEIS evaluates three alternative reuse scenarios and the No-Action Alternative. The No-Action Alternative would involve closing the Charleston Naval Base, relocating or terminating all military activities, and retention of the property by the U.S. Government with no reuse/redevelopment option. This would not benefit the Navy in that they would retain ownership and liability for property with no functional, operational, or strategic value, and it would not benefit the local community since it would remove any possibility of viable and productive use of this land.

Alternative Reuse Scenario 1 and Alternative Reuse Scenario 2 are modifications of plans initially developed by BEST which have been supplemented to identify potential use(s) for those portions of the Base for which no reutilization was originally proposed. Alternative Reuse Scenario 3 was adopted by the BEST Committee and the Charleston Naval Complex Redevelopment Authority, the entity established by the South Carolina Legislature and approved by the Department of Defense (DoD) to receive base property and steward redevelopment. As a result of the environmental analysis of Alternative Reuse Scenario 3 as developed by BEST, it became apparent that minor modifications to the layout would result in less adverse environmental impacts, particularly to wetlands, contaminated areas, and vegetation along Shipyard Creek. In response, Development Concept 3A was developed to be included within Alternative Reuse Scenario 3 which could be implemented by the Redevelopment Authority or another entity charged with redevelopment depending on the results of the ongoing Installation Restoration efforts and RCRA-related studies.

Development Concept 3A is presented herein as a variation of Alternative Reuse Scenario 3 in order to provide the Redevelopment Authority and the local community both the guidance and flexibility necessary to implement the plan. This is appropriate given that the full extent of site contamination and subsequent remedial measures will not be known until the site investigation is completed. As site-specific information becomes available, specific decisions regarding development options will be more practical. For example, if Solid Waste Management Unit (SWMU) 9 is to be remediated via capping and long-term monitoring (which is an option to be decided by the Navy, USEPA, and the State of South Carolina), redevelopment options at this site will need to be modified from that proposed in the original plan as developed by BEST. If remediation of SWMU 9 could be accomplished via other means, the area may become available for redevelopment as proposed in the BEST plan (i.e.,

Intermodal Rail Yard and Industrial Park). Although implementation of Concept 3A would avoid SWMU 9, the method of remediation for this SWMU will not be known until after this EIS is completed and the ROD is issued. Therefore, the Navy does not want to preclude future decisions based on currently available information and thus is presenting Concept 3A as part of Alternative Reuse Scenario 3. The conceptual layout of Concept 3A, as presented in this FEIS, has been modified from the version in the DEIS to improve the operating efficiency at the terminal and promote efficient movement of goods.

Based on actions of the City of North Charleston and the Redevelopment Authority to maximize flexibility in redevelopment to respond to changing market demands, Concept 3B was developed subsequent to the DEIS. Concept 3B emphasizes the reuse and expansion of the existing shipyard facilities by private enterprise. Essentially, Concept 3B is a refinement of Concept 3A. However, this plan changes Concept 3A's emphasis on the development of a Maritime Cargo Terminal and the development of maritime industrial facilities. Like Concept 3A, Development Concept 3B avoids environmentally contaminated areas and wetlands, and maintains a large vegetated buffer along Shipyard Creek. Additionally, it retains the existing shoreline of the Cooper River and does not require crossing of Shipyard Creek.

Reuse Scenario 1. The concept of this alternative is to maximize the use of the Base's existing assets of land and facilities, consistent with public reuse proposals and potential for private market support, while at the same time holding public investments to an absolute minimum. The alternative includes use of existing buildings, roads, and utility facilities as they currently are configured for federal and other public uses which have been identified. The land use concept for this alternative includes an office district utilizing the existing office buildings clustered near the McMillan Gate entrance to the Base. Consistent with the theme of minimizing public investment in this alternative, no major site or building renovations are proposed for the office complex beyond the necessary operational minimums. The area in the vicinity of the existing piers is proposed for development of a 200-acre industrial/commercial area. The existing dredge disposal area and the marina at the southern part of the Base will continue to be used for these purposes. The remainder of the southern portion of the Base would be designated for passive recreation. This scenario also provides for a 70 acre commercial/retail area along Spruill Avenue which would serve the local community and generate taxable income for the local community.

As proposed, approximately 500 acres would be redeveloped by the Redevelopment Authority or another entity charged with redevelopment, with the remaining lands being offered for public sale by the Navy.

Reuse Scenario 2. The concept of this alternative is to promote office, industrial, and tourism development through significant public investment in infrastructure and amenities. This alternative attempts to bring regional tourism to the naval complex by the creation of a destination, mixed use, urban waterfront district encompassing a visitor center, large waterfront park, waterside destination restaurant, city marina, civic buildings, large flat floor exhibition space, naval history exhibit and supporting festival retail uses. A proposed cultural/historic park envisions the restoration of a portion of the Olmsted Park and the Turnbull Plantation with its formal gardens. A total of 1,330,000 square feet of building space is available within the proposed mixed use civic waterfront district. Significant investment is proposed in site and landscape improvements and architectural renovation in the proposed office district in order to create a Class A office park. New rail access would be brought to the industrial district along with appropriate site improvements in order to enhance its marketability. The area in the vicinity of the existing piers is proposed for development of a 300 acre waterfront industrial/commercial district. The marina at the southern end of the Base would continue to be used as a marina. In addition, approximately 90 acres of additional office-training uses, and expanded parks and recreational areas are proposed for the southern portion of the Base.

As proposed, approximately 1,000 acres would be redeveloped by the Redevelopment Authority or another entity charged with redevelopment with the remaining lands being offered for public sale by the Navy.

Reuse Scenario 3. Reuse Scenario 3 includes three development concepts. These include Concept 3 which is the plan as developed by the BEST Committee, Concept 3A, and Concept 3B. Although described separately throughout the FEIS, they are representative of the development concepts approved by the Redevelopment Authority, and are collectively considered Alternative Reuse Scenario 3.

Concept 3 balances civic and community land use with a job-creating office, shipyard, industrial, and maritime uses including an integrated Cargo Terminal, and Marine Industrial Park. The idea of Concept 3 is to appeal to government and the port-related activities. Five major employment centers of 762 acres are proposed in the plan: an Office District, Shipyard District, Marine Industrial District, new Class A Industrial Park, and an intermodal cargo port district. Consistent with the provisions of the McKinney Act, the plan proposes three districts (88 acres) to support important civic and social programs. The port and 130-acre Marine Industrial Park are proposed to be served with new interstate highway access from a new Spruill Avenue interchange on I-26 and new rail connections directly to the

mainline of the CSX and Norfolk and Southern rail lines. Fifty acres of existing shops in the CIA would be retained for immediate and long-term job development. Over 30% of the land is proposed to be dedicated for open space including waterfront parks, play fields, and open space associated with improvements to storm water drainage.

BEST selected Concept 3 as the preferred alternative as it was determined to be most appropriate, consistent with the community goals and objectives, and most likely to succeed in creating the employment, taxes, and economic growth, consistent with the primary goals of the plan. All property at the Base would be redeveloped by the Redevelopment Authority.

Development Concept 3A. Concept 3A is very similar to Concept 3 in that it also includes an Office District, Shipyard District, Marine Industrial District, new Class A Industrial Park, and an intermodal cargo port district. In this alternative, the layout of the Marine Industrial Park, Cargo Terminal, and Intermodal Rail Yard have been modified to avoid existing wetlands, contaminated areas (SWMU 14 and SWMU 9), and the existing vegetated buffer area along Shipyard Creek. To accommodate these changes, the Cargo Terminal would extend into the Cooper River 200 feet further, and occupy approximately 50 acres more than the Cargo Terminal would under Concept 3. Thus, Concept 3A would likely require less maintenance dredging between the Cargo Terminal and the maintained channel than Concept 3. However, dredging requirements for new turning basins, and channel maintenance required to counter any effects of the Cargo Terminal on the local sediment deposition regime under each scenario, cannot be adequately determined or compared until more specific engineering designs are prepared and hydrologic modeling of their effects are performed. In addition, the relocation of the Intermodal Rail Yard/Cargo Terminal necessitates that the State Department facilities be relocated. However, the Redevelopment Authority has indicated that if necessary, this would be done at no cost to the State Department. As a result of modifying the preferred plan, impacts to wetlands would be reduced from 20.5 acres to 9.3 acres. As with Alternative Reuse Scenario 3, the entire Base would be redeveloped by the Redevelopment Authority or another entity charged with redevelopment.

Development Concept 3B. This concept emphasizes the reuse and expansion of the existing shipyard facilities at the base by private enterprise, through the development of maritime industrial facilities intended to support shipyard activities. In addition to the shipyard and maritime industrial districts, this alternative proposes an office district, cultural park district, community support districts, and areas designated for open space and active recreation.

Like Concept 3A, Concept 3B avoids contaminated areas (i.e., SWMUs 14 and 9) and substantial wetland areas, and provides a large vegetative buffer along Shipyard Creek. However, because the Maritime Cargo Terminal is not included, Concept 3B retains the existing shoreline of the Cooper River and does not involve construction in, or filling of, the Cooper River. Further, because Concept 3B does not include the creation of an Intermodal Rail Yard intended to support a terminal, it does not contain potential impacts of constructing a rail/road crossing over Shipyard Creek.

Summary of Environmental Impacts

Demolition, renovation, and new construction associated with implementing Alternative Reuse Scenario 3 (including Concepts 3, 3A, and 3B) would result in impacts to the natural and built environments. Most of these impacts can be mitigated. Impacts associated with Development Concepts 3A and 3B will be slightly different than for Concept 3 and are summarized in Section 4 of this FEIS.

Land Use. Concepts 3, 3A, and 3B are consistent with adjacent industrial land uses. The proposed mix of housing, community service, and open space uses in the western portion of the property ensures consistency with adjacent off-site land uses. The plans include open space/storm water management buffers between on-site industrial uses and off-site residential areas. Final alignment of a new rail/highway corridor with I-26 under Concepts 3 and 3A will need to consider residential areas, wetlands, contaminated areas, and crossing of Shipyard Creek. Use of housing/community service facilities in the southern part of the property by Community Service providers (e.g., NCCC, job training, housing, etc.) will conflict with long-term development of the Cargo/Port terminal or Maritime Industrial uses, but would be addressed by the Redevelopment Authority or another entity charged with redevelopment via interim leases and providing equivalent facilities at other locations as development proceeds. Proposed landscaping would result in long-term aesthetic improvements to the site.

Vegetation. Concept 3 would result in negligible impact to vegetation in the housing area in the northern portion of the property, but redevelopment of the Marine/Cargo Terminal, Intermodal Rail Yard and Marine Industrial Park would significantly affect existing vegetation resources in the recreational areas, dredge disposal area, and undeveloped woodlands of the property. Proposed landscaping would increase the "greenspace" at the Base, but this would consist of relatively low value habitat. Tidal marshes and mudflats along Shipyard Creek and Noisette Creek would not be affected. Wildlife species diversity in the

southern part of the Base would become more representative of urban areas. Concept 3 would adversely impact the existing colony of Least Terns, a state-listed threatened species, depending on which buildings would be demolished. This impact could be mitigated by avoiding the nesting season of April to October and by providing suitable nesting conditions on rooftops of new structures to be constructed. By comparison, Concepts 3A and 3B will result in fewer impacts to vegetation and wildlife resources.

Wetlands and Floodplains. Concept 3 would disturb approximately 20.5 acres of freshwater wetlands, primarily in the southern part of the Base. It should be noted that while preliminary estimates published in the Draft EIS (DEIS) indicated that 77.5 acres of wetlands would be impacted, further examination in conjunction with the United States Army Corps of Engineers (USACE) resulted in a refinement of the wetland assessment. By comparison, Concepts 3A and 3B respectively would result in disturbance of 9.3 and 4 acres of wetlands which could be compensated for through wetland creation, replacement, or enhancement, or by creation of an environmental easement. Prior to development activities in or near wetlands, redevelopment entities will need to acquire appropriate permits from USACE and South Carolina Department of Health and Environmental Control (SCDHEC).

Development Concepts 3 and 3A call for significant new construction within the 100-year floodplain. Although hydrologic modeling will be required to determine the effect of this construction on flood elevation levels, elimination of much of the natural vegetation and filling of lands to raise the elevation of the Cargo Terminal may alter the flood retention ability of the property, requiring approximately 36 acre-feet of storm water detention volume for the 2-year storm event and 100 acre-feet of detention volume for the 10-year event. Because Concept 3B does not involve construction of the Marine Cargo Terminal along the Cooper River, nor as extensive impervious coverage as Concepts 3 and 3A, it would require 30 acre-feet of detention volume for the 2-year event and 50 acre-feet for the 10-year event. These impacts can be mitigated during implementation of the plan by the Redevelopment Authority by reducing the amount of filling and/or installing detention or retention basins designed pursuant to the South Carolina Storm Water Management Act and Office of Oceans and Coastal Resources Management (OCRM) (formerly the Coastal Council) approval.

Water Quality. Development Concepts 3 and 3A would result in significant short-term and minor long-term impacts to the Cooper River due to the construction of the Marine Cargo Terminal, which would extend into the Cooper River approximately 80 acres (130 acres for Concept 3A). The engineering and regulatory constraints to constructing this facility

via a bulkhead and fill would likely result in a portion of this facility being constructed on pilings. Construction of the Marine Cargo Terminal on pilings would require the ultimate developer to obtain Section 10 and Section 404 permits from the USACE and result in significant turbidity and sedimentation impacts on water quality and benthic habitats in the project vicinity for the duration of construction. Depending on its design, the terminal would alter the flow characteristics of the Cooper River and cause nearshore sedimentation similar to or somewhat greater than that of the existing naval piers. However, the dredging requirements probably would be less than current requirements because dredging would not be required underneath the terminal, although hydrological modeling will be required to assess the specific effect of the terminal once engineering design(s) are prepared. Operation of the terminal would have beneficial long-term effects on water quality of the Charleston estuary because of the termination of fueling operations and ship maintenance currently conducted at the piers. Detailed hydrologic modeling would be required as part of the developer's permit application. Construction of the rail/highway access from I-26 to the Marine Cargo Terminal and Intermodal Rail Yard would result in short-term impacts to the water quality and hydrology of Shipyard Creek; these impacts would last for the duration of construction only. Minor, long-term impacts to water quality in Shipyard Creek could occur due to grease and oil from trains and trucks using the railway and highway bridges over Shipyard Creek. Concept 3 would not affect groundwater quality.

Topography, Geology, and Soils. Development Concepts 3A and 3B would not result in significant impacts to soils or geology. However the southern end of the property has been used for dredge material disposal for many years and surficial materials in this area are loosely consolidated clays poorly suited for load support. Construction of the Cargo Terminal facility under Concepts 3 and 3A would require substantial filling of the area (about 100 acres) to an elevation of 10 to 12 feet above mean sea level (MSL) to facilitate loading and unloading of ships. The topography of this area ranges from 0 to 10 feet above MSL. Although the existing topography would be changed significantly, these impacts are not considered significant except for the area in the vicinity of the State Department property, where grade differences would be substantial. The nature of the soils would have an impact on the development of the Marine Cargo Terminal, the Intermodal Rail Yard, and the Marine Industrial Park and may require that structures in some areas be supported on pile foundations. Due to the flat topography of the property, erosion and sedimentation are not a significant concern, but the potential for soil erosion exists where soils have been exposed, deposited as fill, or disturbed.

Air Quality. Stationary air emissions for Concepts 3 and 3A would be similar to current conditions; however air emissions from mobile sources would be higher than current conditions primarily due to the significant increase in rail traffic associated with the reuse plan. Nitrogen oxide (NO_x) emissions would increase from 390 tpy to 825 tons per year (tpy) reflecting a dramatic increase in rail activity at the Base. Sulfur dioxide (SO₂) emissions would decrease from 294 tpy to 56.3 tpy. Carbon monoxide (CO) emissions would decrease from 2,275 tpy to 2,220 tpy. Particulate matter (PM) emissions would decrease from 114 tpy to 14 tpy. Volatile organic compound (VOC) emissions would decrease from 39 tpy to 33 tpy. Because the stationary sources associated with maritime industrial uses under Concept 3B are dependent upon the actual types of facilities realized, air emissions could widely vary, from levels equivalent to Concepts 3 and 3A, to significantly higher levels. The air impacts of each plan would be mitigated by the ultimate developer of facilities through air permitting processes.

Noise. Concepts 3 and 3A would impact the ambient sound levels in the surrounding area as a result of operation of proposed Marine Cargo Terminal, the Intermodal Rail Yard, and the Marine Industrial Park. In particular, noise levels would be generated by loading and unloading of the ships, trains, and trucks near the piers. Construction and operation of a transportation corridor from I-26 and the CSX lines to the Cargo Terminal would also result in noise levels noticeable in the residential communities near the route to be traversed. It should be noted that Concept 3B does not include the access to I-26 and CSX Lines. Demolition and new construction activities would also generate short-term noise levels, but these would not be significant in nearby residential areas. In general, noise levels at the property line are not expected to result in a significant long-term problem.

Transportation. Concepts 3 and 3A propose significant improvements and realignments of the existing roadways at and near the property including the removal/realignment of streets servicing the southern part of the property (i.e., the Cargo Terminal), realignment of McMillan and Cosgrove Avenues, realignment of Virginia Avenue, and new road construction in the vicinity of the office complex. Development Concept 3s and 3A also include is a new highway interchange with I-26 and new rail access to the CSX line to access the Cargo Terminal/Intermodal Rail Yard from the southern part of the Base across Shipyard Creek. The off-base corridor, which could impact an off-base residential area would need to be closely coordinated between the Redevelopment Authority, SCDOT, city of North Charleston, SCDHEC, USEPA, and the local community. Average daily vehicular traffic for a weekday

would be 67,259 trips, a 13% increase from 58,550 trips in 1990. Concepts 3 and 3A also provide for other improvements in the local rail system including abandoning the CSX Intermodal Rail Yard in North Charleston to be replaced by the proposed Intermodal Rail Yard on the property, as well removal of the existing CSX line along the east side of Spruill Avenue. Daily weekday traffic for Development Concept 3B would be somewhat less, totaling 60,102 trips.

Socioeconomics. Full development of Development Concepts 3 and 3A would cost an estimated \$960 million over 20 years, including \$600 million for the new Marine Industrial Park, Cargo Terminal, and Intermodal Rail Yard and \$60 million for area-wide improvements. Concept 3 would create/retain approximately 9,800 jobs on Base and approximately 2,700 indirect jobs, resulting in a net loss of about 8,300 jobs from current conditions. Development Concept 3 projects that the Cargo Terminal would generate 5,700 jobs on Base, and about 16,800 port user jobs. In addition, about 25,000 temporary construction jobs would be generated over the 20-year period as a result of the \$960 million capital expenditures to implement the scenario as proposed. Total regional population is expected to decrease slightly due to Base closure with the most significant loss being in the North Charleston/Hanahan area. Approximately 1,300 federal jobs would be located at the property in the short term due to the location of DFAS and NOAA into excess structures. The Navy's expenditure for site remediation would also result in beneficial economic impacts to the local economy. About 1,000 acres of the 1,500 acres to be redeveloped would be revenue-producing.

Full development of Concept 3B would cost approximately \$210 million over 20 years, the difference primarily reflected in the absence of the Marine Cargo Terminal, Intermodal Rail Yard, and Marine Industrial Park under the plan. Assuming full employment, the plan could retain/create 12,000 on-base jobs and 11,000 indirect jobs, relating to ship building/repair, manufacturing firms, professional firms, and government agencies.

Infrastructure and Utilities. Due to the net reduction of approximately 8,300 direct jobs (or about 30% of current levels), utility demand is expected to drop by about 30% accordingly under Development Concept 3 and Concept 3A. These would not affect the current 55 million gallons/day (mgd) surplus water capacity and 9 mgd surplus wastewater treatment capacity within North Charleston. Steam service would be discontinued as a source for heating and hot water, but sufficient electrical capacity exists to account for this in the short term. The condition of the water and sewer distribution/collection mains would require

that certain portions be replaced. While demand would be somewhat higher under Concept 3B, no significant impacts to infrastructure and utilities are expected.

All three development concepts would minimize the effects of Base closure on local schools, and result in a maximum net student enrollment loss of 1,041 in Charleston County, 1,350 in Berkeley County, and 524 in Dorchester County with a corresponding loss of federal and state aid of \$970,800, \$1,751,400 and 654,850, respectively. The transfer of Navy and civilian personnel from the Base to other Navy jobs in the region would retain approximately 966 students, including 143 military students, in the Charleston area. Although no schools would be closed as a result of the proposed action, Berkeley County would reduce its teaching staff by 35 for the 1995-96 school year. The availability of recreational facilities to the general public would be greatly enhanced since this alternative provides for 30% (420 acres) of the Base to be used for recreation and open space. The city of North Charleston would need to utilize the one existing fire station on Base and hire 10 to 14 additional firefighters at an annual cost of about \$1,200,000. The availability of medical and dental care to military personnel would not be affected. The City of North Charleston would need to hire about 10 new police officers at a cost of \$1,000,000.

Implementation of Development Concepts 3, 3A, and 3B will allow for the reuse of former Base property and facilities by human/community service providers that assist the homeless, as required by the Stewart B. McKinney Homeless Assistance Act of 1987. Through the establishment of a tri-county task force of human/community service providers organized by the BEST Committee, a coordinated plan was established for the identification, acquisition, lease, and administration of suitable facilities on base for use by such service providers. Following the completion of the Base Reuse Plan, the task force executed a Memorandum of Agreement (MOA) with the Charleston Naval Complex Redevelopment Authority, outlining the process and responsibilities with regard to the transfer of McKinney Act properties. The MOA specifically allows for site adjustments by the Redevelopment Authority during the long-range implementation of the Base Reuse Plan, relocating McKinney Act uses to achieve compatibility. Such site adjustments may only be conducted provided that a "like facility" is made available to the human/community service provider(s).

Cultural Resources. Development Concepts 3, 3A, and 3B would not affect any area of archaeological sensitivity; however, any future ground disturbance in the vicinity of site 38CH1496 in the officers housing area may result in some adverse impacts. The future use and maintenance of any of the 116 structures which are potentially National Register of Historic Places (NRHP)-eligible would be guided by the terms and conditions of an MOA to

be developed between the Navy and the South Carolina Department of Archives and History and the National Advisory Council.

Environmental Contamination. Development of the Marine Cargo Terminal would potentially be affected by existing SWMUs; however, remediation of this area to allow for the Cargo Terminal would occur prior to property transfer. AOC 690, the dredge material disposal area, would also affect development; however, confirmatory sampling has not yet been completed to determine actual extent of contamination. Given the industrial nature of the adjacent areas, it is possible that the proposed rail/road corridor would traverse a regulated waste site or area of unknown contamination. The most significant possible constraint to implementation of the Marine Industrial Park and Intermodal Rail Yard as proposed is the presence of SWMU 9 (closed landfill), SWMU 14 (chemical disposal area), and AOC 503 (unexploded ordnance). Although these areas would be remediated prior to transfer, it is possible that the method of remediation (RCRA cap and long-term monitoring) would require that the design and layout be modified in accordance with the contingency layout proposed in Concept 3A. AOCs and SWMUs will be remediated as per applicable state and federal regulations.

Significant Impacts and Areas of Controversy

Reuse and redevelopment of the Charleston Naval Base would result in significant positive and adverse impacts to the City of North Charleston and the Trident Region. The positive impacts result primarily from Alternative Scenario 3's mitigation of economic impacts resulting from Base closure. Significant adverse environmental impacts include the potential displacement of 1.5% of the state's Least Tern nesting colonies; siting of the proposed road/rail access from I-26 and the CSX line adjacent to residential areas and across Shipyard Creek to the southern portion of the Base; the existence of environmental contamination which would preclude or modify proposed redevelopment activities; and impacts from construction of the Cargo Terminal which would directly affect the Cooper River.

No areas of significant public controversy have been identified, although public concern has been expressed regarding land use and traffic impacts to adjacent residential areas, fiscal impacts to the City of North Charleston and the Trident region, environmental contamination, employment, wetlands and natural resources, the feasibility of the plan and the need for a Cargo Terminal.

The City of North Charleston has expressed concern regarding the feasibility and appropriateness of including a Maritime Cargo Terminal on the Base property. The city has

expressed a desire to expand shipbuilding/repair and waterfront industrial uses rather than build a Cargo Terminal. As requested by the City of North Charleston and the Redevelopment Authority, Development Concept 3B has been incorporated into this FEIS.

Issues to be Resolved

Several issues pertaining to the implementation of Alternative Reuse Scenario 3 (including Concepts 3, 3A, and 3B) are currently unresolved. Many of these issues cannot be fully addressed at this time either because the Redevelopment Authority has not taken formal actions or because necessary studies and investigations are ongoing and have not been completed. These issues are identified herein in order to provide decision-makers with an understanding of key factors in reuse planning which cannot be fully evaluated at this time. These issues will continue to be addressed during the initial stages of property transfer and redevelopment. Supplemental NEPA documentation may be necessary if the resolution of any issue(s) may significantly modify the decision resulting from this EIS process.

Specific issues, as addressed in Section 2.2.1 (Future Actions) of the FEIS include:

- Required permits and approvals;
- Subsequent NEPA documentation;
- Interim leasing arrangements;
- Environmental cleanup;
- Siting of proposed access road and rail facility; and
- Development of performance and design standards.

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1.1 Introduction

This Final Environmental Impact Statement (FEIS) for disposal of excess Navy property and subsequent reuse and redevelopment of the Charleston Naval Base addresses the potential impacts of property disposal, new construction, renovation, and demolition activities associated with the implementation of the Charleston Naval Base Reuse Plan as prepared by the Building Economic Solutions Together Committee (BEST). Charleston Naval Base will be closing pursuant to the Defense Base Closure and Realignment Act of 1990, commonly referred to as BRAC. This FEIS responds to comments received on the Draft Environmental Impact Statement (DEIS), and includes additional clarifications and refinements of information pertaining to the proposed action.

This FEIS has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA); the Council on Environmental Quality Regulations on Implementing NEPA Procedures (40 CFR 1500-1508); OPNAVINST 5090.1A (Chapter 5); and BRAC of 1990 (Title XXIX, of P.L. 101-510, "National Defense Authorization Act for Fiscal Year 1991") as amended by P.L. 102-190 and P.L. 102-484.

1.2 Description of the Proposed Action

In accordance with the requirements of 32 CFR 91.7[c][1] (Revitalizing Base Closure Communities and Community Assistance), the proposed action, as addressed by this FEIS, is the disposal of excess Naval property and subsequent reuse and redevelopment of property pursuant to the preferred conceptual development scenario as identified in the *Charleston Naval Complex Reuse Plan* (hereafter referred to as the Reuse Plan) prepared by the BEST Committee and approved by BEST on May 12, 1994 and the Charleston Naval Complex Redevelopment Authority on August 24, 1994. The entire Reuse Plan is not included in this FEIS, but rather is summarized in Section 2 (Alternatives) of this FEIS to allow the reader an

understanding of the plan for impact analysis purposes. The Reuse Plan, in its entirety, is available through the Redevelopment Authority. It should be noted that the reuse plan (including all development scenarios) is conceptual and is intended to focus on proposed land uses and not on specific developments. Detailed engineering and design studies will need to be undertaken by the Redevelopment Authority or specific project sponsors prior to implementation of redevelopment activities.

Alternative Reuse Scenario 3, which has been identified as the Preferred Alternative Scenario, includes three development concepts. The first is the conceptual reuse plan as developed by the BEST committee, referred to as Development Concept 3. The second concept is referred to as Development Concept 3A, and the third concept is referred to as Development Concept 3B. For the purpose of this EIS, and as requested by the Redevelopment Authority, all three development concepts collectively comprise Alternative Reuse Scenario 3.

Contingent upon the findings and conclusions of the ongoing Installation Restoration and RCRA site investigations, land uses at certain areas of the property may be affected by site remediation. If selected site remedial activities preclude specific uses of portions of the Base as proposed in the Reuse Plan, the layout of redevelopment may need to be modified. To reflect what the Alternative Reuse Scenario 3 may look like if changes to its layout are warranted, this FEIS addresses a Development Concept 3A that could be implemented by the Redevelopment Authority. Concept 3A retains the components and features of Development Concept 3 as approved by BEST and the Redevelopment Authority, but illustrates how these components can be reorganized to avoid areas which, subsequent to the EIS process, may be found to affect future development.

The conceptual layout for Concept 3A has been revised in the FEIS to make the operation of the Cargo Terminal more efficient. The State Department has been relocated to allow the rail yard to be moved to the back of the Cargo Terminal allowing more efficient movement of goods. The State Department will be relocated to other available space at no cost to the Department at such time as the Cargo Terminal is approved.

In response to requests by the City of North Charleston and the Redevelopment Authority, Development Concept 3B was developed as an attempt to focus redevelopment efforts on creating the greatest number of new jobs and the related beneficial economic impacts in the near term to offset the economic impacts of Base Closure (Redevelopment Authority 1995a). Concept 3B is similar to Concepts 3 and 3A, except that it does not include a Cargo Terminal, Intermodal Rail Yard, and Industrial Park. These uses are replaced with maritime industrial uses.

The redevelopment and reuse of the property will be the responsibility of the Redevelopment Authority, and not the Navy. As such, the Authority, along with local, state, and other federal regulatory agencies will ultimately be responsible for ensuring that redevelopment proceeds, appropriate permits, and approvals are obtained, and suggested mitigation measures are implemented.

1.3 Purpose and Need

The purpose of the proposed action is to comply with BRAC; President Clinton's 5-Part Plan, "A Program to Revitalize Base Closure Communities" (July 2, 1993); the National Defense Authorization Act for Fiscal Year 1994 (Title XXIX, Subtitle A - Base Closure Community Assistance); and the interim final rule promulgated by the U.S. Department of Defense (32 CFR Parts 90 and 91 - Revitalizing Base Closure Communities and Community Assistance).

Closure of the Charleston Naval Base was mandated by BRAC pursuant to the recommendations of the 1993 Base Closure and Realignment Commission for the purpose of reducing the military infrastructure and saving operation and maintenance costs over the long term. Disposal of the property is therefore necessary so that the Navy does not continue to incur operation and maintenance costs of the facility after it has closed.

The purpose of the FEIS is to assist the Secretary of the Navy in a series of interrelated decisions concerning the future disposition of the Base. The purpose of the Reuse Plan as proposed by the BEST Committee is to guide the redevelopment of the lands currently occupied by the Navy. Redevelopment of the Base will be the responsibility of the newly created Redevelopment Authority, which is an appointed 12-member board to guide the implementation of the Reuse Plan (see Section 2). The disposal of the property will be the responsibility of the Navy. This document provides the decision makers and the public the information required to understand the future environmental consequences of the potential reuse of the Charleston Naval Base.

Another purpose of this FEIS is to assist the Redevelopment Authority in implementing a preferred plan and supplementing future planning and redevelopment decisions. This EIS identifies potential environmental impacts which would result from redevelopment of the property pursuant to the proposed Reuse Plan (and its versions) and its reasonable alternatives. It is not the intent of the Navy to endorse or authorize a particular Reuse Scenario, but only to project potential impacts and identify reasonable mitigation measures.

1.4 Location of the Proposed Action

The Charleston Naval Complex encompasses all of the Naval activities in the Charleston region. Within this Complex is the Charleston Naval Base, the Naval Weapons Station/Polaris Missile Facility Atlantic (POMFLANT), the Naval In-Service Engineering Directorate (NISE) East Headquarters, the Naval Hospital, the Southern Division, Naval Facilities Engineering Command (SOUTHDIV) and the Mobile Mine Assembly Group (MOMAG). This FEIS only addresses the disposal and reuse of the Charleston Naval Base. The remaining activities within the Charleston Naval Complex are not scheduled for closure.

1.4.1 Charleston Naval Base

The Charleston Naval Base is located within the corporate limits of the City of North Charleston, South Carolina. It is bounded on the east by the Cooper River and is approximately five miles north of the City of Charleston (see Figure 1-1). The Naval Base consists of approximately 2,911 acres with 1,575 acres located on the west side of the Cooper River and 1,397 acres on the east side of the Cooper River on Clouter Island (see Figure 1-2).

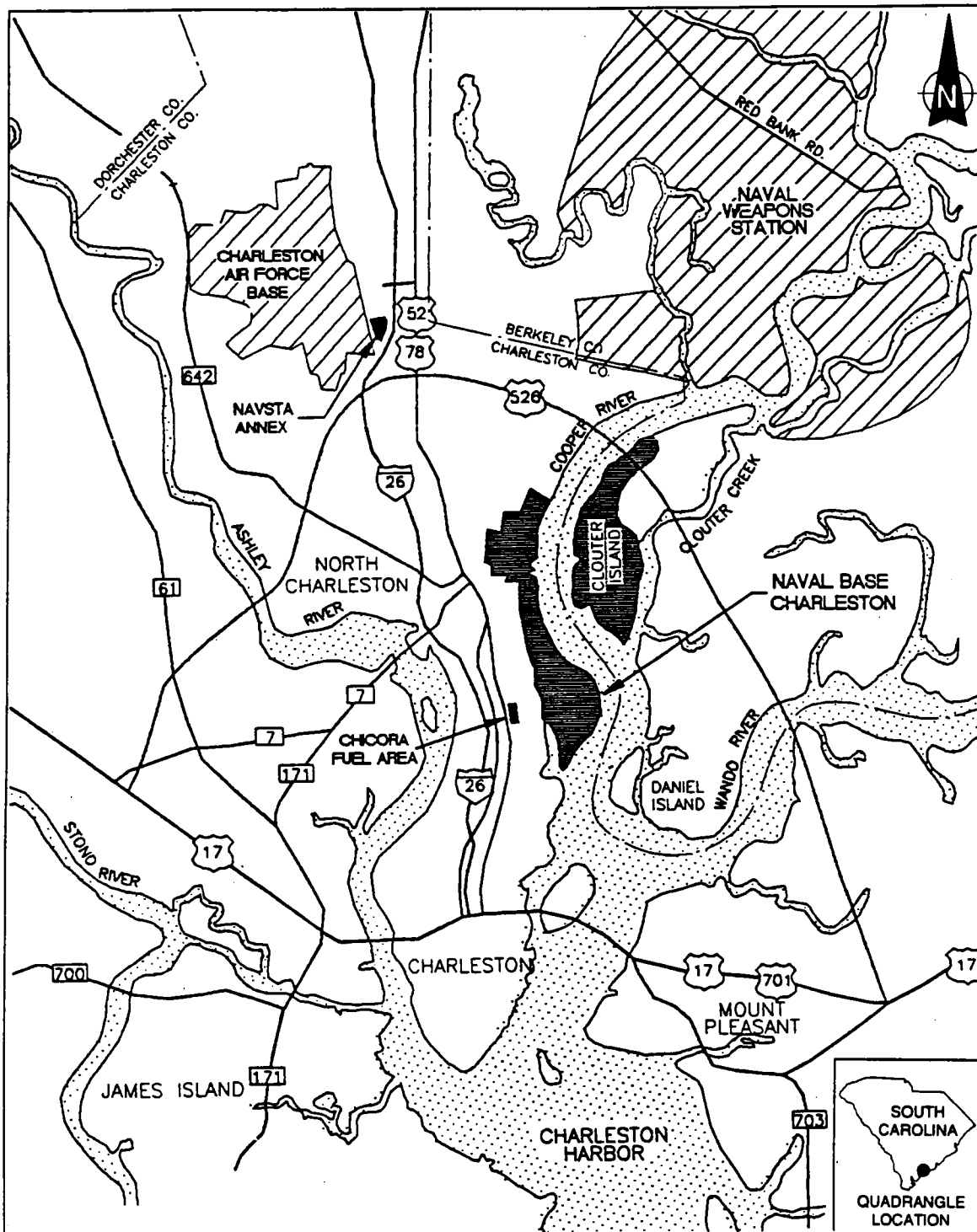
The following sections describe the Base that will be closed and/or realigned pursuant to the proposed action.

Naval Shipyard (CNSY) Charleston

CNSY is located within the intensely developed central portion of the Base and occupies approximately 505 acres of upland, marsh, and surface water. The mission of CNSY is to perform work in connection with construction, conversion, overhaul, repair, alteration, drydocking, and outfitting of ships and submarines serving the Atlantic Fleet (U.S. Department of the Navy 1989). The 1,397-acre Clouter Island Dredge Material Disposal Area is owned by the CNSY; however, this area has not been declared excess by the Navy due to its possible need to dispose of dredge material from the Naval Weapons Station.

Naval Station (NAVSTA) Charleston

NAVSTA is a support command which controls 842 acres of real estate. The main activity is located in the southern portion of the Base; however, other NAVSTA properties are situated at a variety of locations both on- and off-Base. Off-Base sites include the 42-acre Naval Station Annex located adjacent to the Charleston International Airport, the 57-acre Short Stay Recreational and Camping Area located on Lake Moultrie in Berkeley County, and



SOURCE: BCO, 1994



Figure 1-1 REGIONAL MAP

the three-acre Degaussing Facility located on the Cooper River in downtown Charleston (U.S. Department of the Navy 1985). Both the Air Force and the Army Reserves have expressed interest in acquiring the NAVSTA Annex via DoD transfer from the Navy, therefore, it is not discussed in this FEIS. Reuse impacts at this location will be addressed via future NEPA documentation to be undertaken by either the Air Force or Army Reserve. The other off-Base NAVSTA activities are not addressed in this FEIS in that they are located on properties currently leased by the Navy and are therefore not subject to disposal and reuse activities.

Fleet Industrial Supply Center (FISC)

FISC is a support-oriented command which controls approximately 194 acres primarily in the northern portion of the Base. The activity also includes small storage and supply depots throughout the Base. Its primary mission is to provide material support and supply-related services for submarines and surface ships and related tending vessels homeported in Charleston, and at 100 shore installations in the United States and overseas. Also included is the Chicora Tank Farm, a detached area of approximately 24 acres located 0.5 mile from the main gate in North Charleston. The Chicora Tank Farm comprises six concrete underground tanks including five 50,000 BL tanks and one 27,500 BL tank used for fuel storage operations (U.S. Department of the Navy 1988).

Fleet and Mine Warfare Training Center (FMWTC)

FMWTC is a 10.4-acre, land-owning command located at the southern end of the Base. The command provides classroom training in the techniques of planning, maintenance, and operation of mine warfare systems as well as air, surface, and subsurface training in various aspects of shipboard operations and maintenance (U.S. Department of the Navy 1985).

Fleet Ballistic Missile Submarine Training Facility (STF)

STF trains an average of 585 students per day to a level of increased proficiency in the skills required to operate submarines. It is located on 8 acres of land and includes buildings FBM61 and 686 in the southern part of the Base (U.S. Department of the Navy 1985).



SOURCE: Ecology and Environment, Inc. 1994

Figure 1-2 SITE LOCATION MAP, CHARLESTON NAVAL BASE

Naval Reserve Center (NAVRESCTR)

NAVRESCTR is located in the southern area of the Base. Its primary mission is to provide supervision and support for naval reserve units.

1.4.2 Base Closures and Realignments

BRAC required the Department of Defense (DoD) to develop a force structure plan as part of its budget justification for fiscal years 1992, 1994, and 1996 that would assess the probable threats to national security and describe the force structure required to meet the national defense requirements; develop closure and realignment selection criteria to be used in making recommendations for the closure or realignment of military installations; and develop a list of military installations recommended for closure or realignment. The Act created the Base Closure and Realignment Commission to review recommendations of the DoD for closure and realignment of military installations and submit its own recommendations to Congress in calendar years 1991, 1993, and 1995.

The 1993 Base Closure and Realignment Commission reviewed the force structure plan, selection criteria, and recommendations of the DoD to ensure recommendations for closure and realignment of military installations did not conflict with the force structure plan and provided its findings, conclusions, and recommendations to President Clinton on June 28, 1993. After presidential approval, the recommendations were submitted to Congress. By statute, disapproval of the recommendations by Congress required enactment of a joint resolution. Since this did not occur, the recommendations for closure and realignment became mandatory.

BRAC exempts the Secretary of Defense from considering under NEPA any of the following three factors: the need for closing or realigning those military installations that have been approved for closure by the Congress; the need for transferring functions to any military installation that has been selected as the receiving installation; or alternative military installations to those recommended or selected.

In accordance with the 1993 BRAC Commission decision, Charleston Naval Base will be closed. Operational closure of the Base will officially take place on April 1, 1996.

1.4.3 Federal Property Disposal Procedures for Base Closure

BRAC authorizes disposal of federal property by the U.S. Secretary of Defense in compliance with the Federal Property and Administrative Services Act of 1949 and the Surplus Properties Act of 1944. Under these statutes, the Navy must determine if the

property is excess to the needs of the military, and surplus to the needs of the federal government. It makes this determination after conducting a federal screening process. The Navy notifies DoD/federal agencies of the availability of the property. The property is declared surplus if it is "not required for the needs and the discharge of the responsibilities of all federal agencies." The results of the federal screening process are included in Appendix A.

The Stewart B. McKinney Homeless Assistance Act was enacted by Congress in 1987 to offer recognized providers of assistance to the homeless a priority in acquiring federal property that has been declared excess and surplus. The U.S. Department of Housing and Urban Development determines if the property is suitable for use by the homeless; homeless assistance providers are notified; and an application process ensues. If an application is accepted, the property, or portions thereof, can be transferred to homeless assistance providers. The results of the McKinney Act screening process are summarized in Appendix B and in Section 4.11 of this FEIS, and is addressed in detail in the Base Reuse Plan (BRP).

Another avenue for property disposal is as a public benefit conveyance. For a demonstrated public benefit, property can be transferred to another federal, state, or local agency without compensation to the Navy. Uses that have qualified as public benefits in the past include conservation, recreation, aviation, health, and education.

In July 1993, President Clinton initiated a new 5-Part Plan to assist communities impacted by a Base closure and to encourage economic redevelopment on former Base properties. Congress enacted Subtitle A - Base Closure Community Assistance, under Title XXIX of the National Defense Authorization Act for Fiscal Year 1994 (P.L. 103-160 the "Pryor Amendment") to provide the legal authority to implement the President's plan. Under the statute, the Secretary of Defense was required to prescribe regulations to implement provisions of the statute. Although the interim rules (32 CFR 90 and 91) provide for rapid sale of the property by the Navy if a "ready market" for jobs-centered development exists, a waiver of this requirement has been approved by the Navy, thus allowing the opportunity for the Base to be transferred to the Redevelopment Authority under an economic development conveyance.

The Pryor Amendment was also intended to expedite mandated review and clearance procedures for disposal under various federal statutes (e.g., NEPA, CERCLA, McKinney Act, etc.) through running concurrent review time periods or fast-tracking of procedures. The major provisions of the legislation include:

- That the authority for disposing Bases has been delegated by Government Services Administration (GSA) to the Secretary of Defense, and redelegated to the secretaries of the military departments (32 CFR 90.2);
- That the Amendment seeks to expedite the NEPA process through utilization of a community's recommended reuse plan as the proposed action for NEPA review procedures (32 CFR 91.7[c][1]);
- That conveyances of surplus Base lands at no cost would be permitted for transfers to local redevelopment authorities for economic development purposes provided, however, that once these lands are sold or redeveloped, 40% of the profits would be shared with DoD (profits are defined as proceeds received minus capital costs incurred by the redevelopment authority to make the site suitable for reuse) (32 CFR 91.7 [e] and [f]);
- That conveyances of surplus Base lands at no cost would be permitted for economic development transfers, specifically in rural areas, without profit sharing with DoD as described above (although this would not apply to Charleston); and
- That minimum levels of maintenance and repair are required to be conducted by the DoD after Base closure and prior to disposal to protect assets suitable for reuse (32 CFR 91.7 [i]).

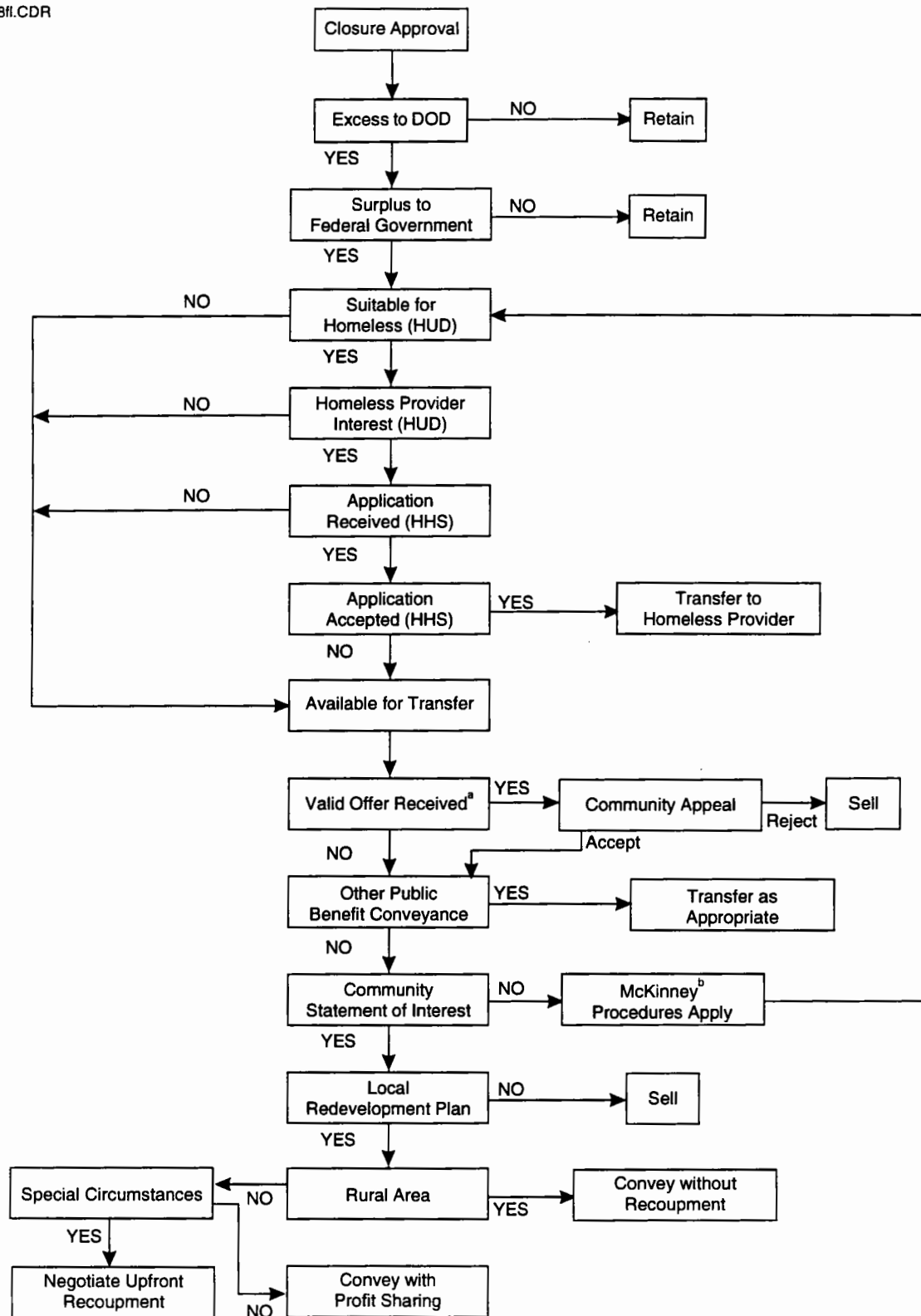
The regulatory process for disposal of property is illustrated on Figure 1-3.

Disposal and reuse activities at Charleston Naval Base will be closely linked to environmental investigation, restoration, and compliance activities for two basic reasons:

- Federal property transfer to nonfederal parties is governed by CERCLA Section 120(h)(3)(B)(i); and
- Residual contamination may remain on certain areas of the Base after remedial actions have been completed or put in place, thereby restricting the future use of those properties. Should, at some time, future use of the property change requiring a greater level of clean-up, the Navy will be responsible for any additional remediation.

1.4.4 Base Closure Schedule

Although operational closure of Charleston Naval Base will occur on April 1, 1996, several of the activities and commands will either relocate or disestablish prior to this date. In general, the major facilities that will be closed are as follows:

**KEY:**

DOD = U.S. Department of Defense

HUD = U.S. Department of Housing and Urban Development

HHS = U.S. Department of Health and Human Services

^a Identification of "ready market" for jobs-centered development.^b Stewart B. McKinney Homeless Assistance Act of 1987, as amended.

SOURCE: 59 FR 66

Figure 1-3 PROPERTY DISPOSAL PROCESS

Activity	Departure Date
NAVSTA	April 1996
CNSY	April 1996
FISC	April 1996
FMWTC	December 1995
STF	June 1995
NAVRESCTR	May 1995
Active Fleet	October 1995

Figure 1-4 illustrates a projected timeline for Base closure actions. Navy property will be available for interim leases prior to operational closure.

1.5 Public Involvement

A Notice of Intent (NOI) to prepare an EIS was published in the Federal Register on April 26, 1994 (See Appendix C). In addition, a scoping notification letter and fact sheet were distributed to nearly 500 federal, state, local elected officials and agency representatives, and other interested parties. Newspaper notices of the Navy's intent to prepare an EIS and an invitation to public scoping meetings were published in the Charleston News and Courier from April 28 to May 4, 1994 (see Appendix C).

Four public scoping meetings were held in the Trident Region. In order to provide the public with an opportunity to comment on both the Reuse Plan and the scope of the DEIS, the meetings were held concurrently with BEST public meetings to present the Preferred Development Plan. Scoping meetings were held on May 11, 1994 at the Chicora Neighborhood Community Center and at the North Charleston City Hall, and on May 12, 1994 at the Berkeley County Office Building and Dorchester County School District 2 Office Building. The North Charleston meeting was broadcast live on local cable television. Twenty-eight people attended the Chicora Neighborhood meeting; 48 people attended the North Charleston Meeting; 14 people attended the Dorchester County meeting; and 10 people attended the Berkeley County Meeting. Six written responses were received prior to the end of the comment period on June 10, 1994.

Issues and concerns have been derived from comments received during the scoping period, conversations with representatives of local and state government agencies, and agency correspondence to date in connection with the data collection efforts for the FEIS. Table 1-1

Table 1-1 LIST OF ISSUES IDENTIFIED IN THE SCOPING MEETINGS AND WRITTEN COMMENTS RECEIVED	
Issue	FEIS Section
North Charleston Meeting	
Noise levels	3.7, 4.7
Environmental Cleanup	3.13, 4.13
Land Use Restrictions from Contamination	4.13
Request for Building NS 46	
McKinney Act Screening Process	3.11, 4.11, Appendix B
Nuclear Wastes	3.13, 4.13
Phasing of Plan Implementation	2
Creation of Jobs	2.3, 4.9
Use of Local Labor for Cleanup Activities	4.9
Chicora Neighborhood Meeting	
Impacts from the Proposed Road/Rail Connector	4.8
Impacts to Nearby Communities	4.1, 4.11
Relocation of Homes/Residents	4.1
Employment	4.9
Impacts from Proposed Cargo Terminal	4.1, 4.8
Relocation of Rail Lines	4.8
Increased Volume of Rail Traffic	4.8
Tourism	4.9
Cost to Implement the Reuse Plan	2.3
Fiscal Impacts to the City of North Charleston	4.9, 4.11
Schedule for Construction of Spruill Interchange	2.3.3, Fig. 2.7
Impacts of Rail Use on Traffic Flow	4.8
Increases in Truck Traffic	4.8
Representation of Local Communities	1.5, 2.1, 2.2
Local Community Involvement in Process	1.5, 2.1, 2.2
Berkeley County Meeting	
Base Redevelopment Feasibility	a
Commitment from State Ports Authority	2

Table 1-1 LIST OF ISSUES IDENTIFIED IN THE SCOPING MEETINGS AND WRITTEN COMMENTS RECEIVED	
Issue	FEIS Section
Commitment From City of North Charleston	2, 4.1
Concern Over Future Funding	2
Private Interest in Shipyard	4.9
How Will Contamination Affect Implementation	4.13
Dorchester County Meeting	
Impact of Floodplain on Redevelopment	3.3, 4.3
Status of RFP for Shipyard	4.9
Method of Land Transfer or Interim Leases	Executive Summary, 2
Environmental Contamination	3.13, 4.13
Status of Environmental Cleanup	3.13, 4.13
No Action Alternative	2.4
Written Comments Received	
Affects of Contamination on Implementation (USEPA)	3.13, 4.13
Agency Coordination (USEPA)	1.5, 11
Evaluation of Alternatives (USEPA)	2.5, 4
Historic and Archaeological Resources (USEPA)	3.12, 4.12
New Highway Interchange (USEPA)	2.3.3., 4.1, 4.8
Environmental Equity (USEPA)	6.3
Dredging and Fill Activities (USEPA)	3.4.3, 4.4
Noise and Lighting Impacts (USEPA)	4.7, 7
Non-Point Source Runoff (USEPA)	4.4
Stormwater Management (USEPA)	3.10.3, 4.10
Pollution Prevention (USEPA)	4.13
Impacts to Wildlife (USEPA)	4.2
Contamination at Southern Part of Base (USEPA)	3.13, 4.13
Wetlands Impacts (USEPA)	4.3
Bird Nesting Area (USEPA)	3.2.2, 4.2
Historic and Cultural Resources (NTHP)	3.12, 4.12
Park and Recreational Areas (DOI)	3.11.2, 4.11

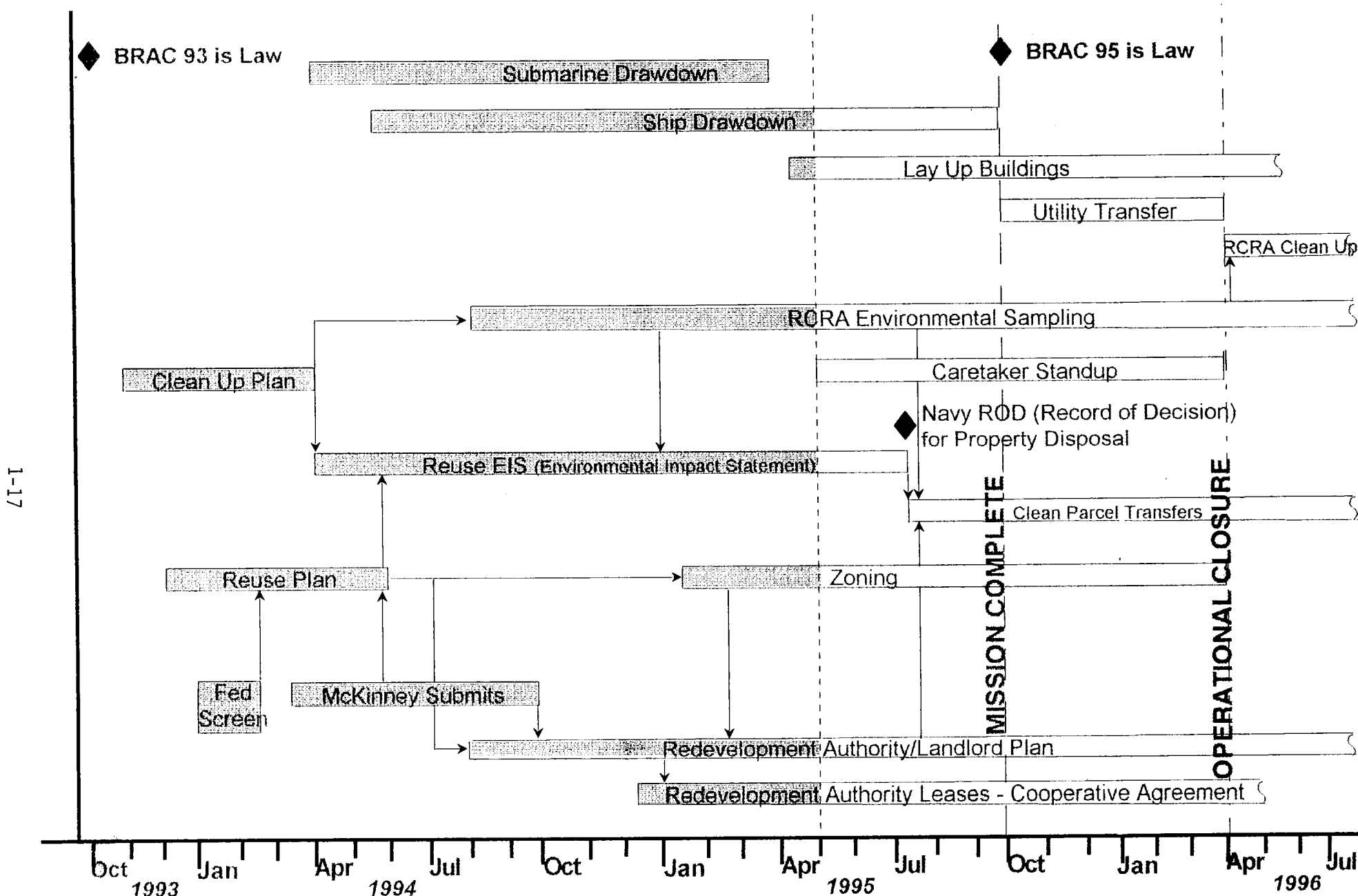
Table 1-1 LIST OF ISSUES IDENTIFIED IN THE SCOPING MEETINGS AND WRITTEN COMMENTS RECEIVED	
Issue	FEIS Section
Socioeconomic Environment (Floy Deaton)	3.9, 4.9
Relocation of COMOMAG (Elinor Cohea)	1.4

- ^a This issue can only be addressed by the local community and the Redevelopment Authority during the implementation process. Many factors will determine the fiscal and environmental feasibility of the preferred development plan. Some of the factors; including costs to implement development restrictions due to remediated contamination sites, and the changing local and regional economic climate cannot be accurately assessed or evaluated at this time.

Key:

- (USEPA) = U.S. Environmental Protection Agency.
 (NTHP) = National Trust for Historic Properties.
 (DOI) = U.S. Department of Interior, National Park Service.

Charleston Naval Complex Closure and Reuse Actions



lists the issues and concerns and the section of the FEIS where each issue or concern is addressed.

The Navy distributed the DEIS to all interested persons for review and comment (See Section 11). Public comments on the DEIS were received during two Public Hearings held November 28, 1994 at the Chicora Community Center and November 29, 1994 at the North Charleston City Hall. The North Charleston Public Hearing was broadcast live on local cable TV. All written comments received are included in Appendix H of this FEIS. Oral comments received at the two public hearings are summarized and responses are provided in Appendix I of this FEIS. All comments were considered in this FEIS which has been prepared following the close of the 45-day comment period.

2.1 Background: Preparation of Conceptual Reuse/Redevelopment Plan

The reuse planning process was initiated in the fall of 1993 by the Trident's BEST Committee, which was charged by South Carolina Governor Campbell with developing the Reuse Plan. With a diverse, broad-based membership from both public and private sectors, the BEST Committee represents the entire Trident Region (Charleston, Dorchester, and Berkeley counties).

The planning process, conducted from November 1993 to June 1994, included four basic phases: 1) Goal setting and confirmation of scope, 2) Opportunities and constraints analyses; 3) Alternative concepts, and 4) Preferred Development Plan (BEST 1994).

At each step, the BEST Committee sought and obtained input from all affected constituencies, including Base workers, public officials, leaders in business and education, state and federal agency staff, and citizens of the Trident Region. Particular focus was given to the City of North Charleston as the host community. The outreach program included over 15 public forums; meetings with neighborhood residents, Naval Base workers and the North Charleston City Council and Planning Commission; and the participation of affinity groups representing a variety of special interests (BEST 1994).

The intensive process ultimately produced a consensus within the Trident Region. Three alternative conceptual plans were developed for review and evaluation, and a final preferred conceptual plan was selected. The BEST Committee unanimously approved the final Reuse Plan on May 12, 1994, and by the Charleston Naval Complex Redevelopment Authority on August 24, 1994. This plan is referred to herein as Alternative Reuse Scenario 3: Development Concept 3.

Following the DEIS public review and comment process, actions were taken by the City of North Charleston and the Redevelopment Authority that required a new alternative plan be developed and considered in the Navy's NEPA decision-making process. Based upon

concerns regarding the job creation potential, local economic impacts, and the time frame required for the realization of the Maritime Cargo Terminal included under Development Concepts 3 and 3A, the North Charleston City Council passed a resolution on January 12, 1995 stating its strong desire for the Redevelopment Authority to reconsider the Reuse Plan's emphasis on the Cargo Terminal (City of North Charleston 1995a). The resolution also stated the City's desire to not only allow, but encourage shipbuilding and other industrial uses on the property following closure of the Base and to amend the Reuse Plan accordingly to meet these objectives (City of North Charleston 1995a). Concurrently, the Council passed a resolution amending the North Charleston Zoning Ordinance, prohibiting the development of a Maritime Cargo Terminal in any district which is also located in a tax increment finance district, such as the lands comprising the Base (City of North Charleston 1995b).

In response to these actions taken by North Charleston, the Redevelopment Authority passed a resolution on February 14, 1995, authorizing and directing the Chairman and the Redevelopment Authority staff to make arrangements for the preparation of an amendment to the Reuse Plan to include a scenario without a Maritime Cargo Terminal, and to ensure that the Navy's NEPA documentation on the project take into consideration this change (Charleston Naval Complex Redevelopment Authority 1995b). On February 16, 1995, the Redevelopment Authority formally requested that the Navy formulate and analyze this new alternative, known as Development Concept 3B, and include this new documentation in the Final Environmental Impact Statement (FEIS) (Charleston Naval Complex Redevelopment Authority, 1995c). The Redevelopment Authority approved a layout for Concept 3B on February 23, 1995, and provided it to the Navy on February 27, 1995 (Charleston Naval Complex Redevelopment Authority 1995a).

Community Reuse Goals

Community participation ensured a responsive planning effort, helped set priorities for reuse, and achieved consensus. The following goals for the Reuse Plan were developed by the BEST Committee.

- Maximize regional job retention and job creation;
- Plan the Base reuse in concert with the goals of the City of North Charleston;
- Utilize the resources of the Naval Complex to support the Trident Region's community, economic, and environmental goals;

- Create a receiving entity which is accountable to the policy leadership of the region; and
- Assemble the resources to implement the plan in a fair and equitable manner.

2.2 Implementation of the Reuse/Redevelopment Plan

Charleston Naval Complex Redevelopment Authority

The South Carolina Legislature has enacted legislation that created the Charleston Naval Complex Redevelopment Authority (i.e., Redevelopment Authority) to act as the receiving entity and to carry out the orderly redevelopment of the Charleston Naval Base property. The Redevelopment Authority is legally empowered to buy and sell property, perform landlord functions, incur debt, and raise funds. It is the responsibility of the Redevelopment Authority to secure the funding which was identified in the Reuse Plan as necessary for plan implementation.

The Redevelopment Authority or other entity charged with redevelopment will only have responsibility for lands which it has control over via lease or transfer. Development of lands offered and sold at a public sale, if conducted, would be subject to local land use regulations (i.e., zoning).

Performance Standards and Requirements

Performance standards have been identified in order to assure adherence to the goals of the Reuse Plan and guide the Redevelopment Authority or the entity charged with redevelopment in implementation. These standards place conditions on all future users of the property to ensure that multiple users will coexist successfully. The following performance standards or conditions are stated in the Reuse Plan (BEST 1994).

Highest and Best Use of Land and Buildings

- To justify reuse, minimum space standards of 250 square feet per employee are proposed for office facilities and 550 square feet per employee for shipyard and industrial activities. Lesser densities would be an inefficient use of resources, increase operating costs, and deny use of buildings, land, and other assets to other potential employers.
- Water dependent uses (maritime cargo, shipyard, marine-related industry, boating, etc.) should have priority access to facilities and locations along the Cooper River.

- Any modifications to the Plan should continue to ensure the same or better levels of employment generation.
- Interim use of buildings or facilities slated for demolition or another use in a later phase should be allowed (and encouraged) to the extent the interim use is economically viable, creates or retains jobs, and does not diminish the implementation of permanent use.
- The locations of interim/short-term uses with similar needs and operational characteristics should be consolidated in the interest of public safety, operating efficiency, and availability of common support services.

Land Use

- The Reuse Plan is intentionally flexible and anticipates multiple uses and phased development. Therefore, all tenant's interests will be protected by the following conditions:
 - The full range of utility services will be continuously provided during all phases of redevelopment;
 - The full range of public safety services will be continuously provided during all phases of redevelopment;
 - Suitable vehicular and pedestrian access will be continuously maintained during all phases of redevelopment; and
 - To ensure compatibility of adjacent uses, measures to mitigate adverse impacts of noise, lighting, or visual features will be required. These may include screening, landscaping, sound barriers, and other site-related actions.

Environment

- Site and building design for both renovation and new construction must respond to the conditions revealed by environmental investigations. Innovative cleanup measures should be implemented where they can assist in meeting Plan objectives.
- Building and site design standards should be developed that foster energy efficiency and minimize life cycle costs.
- Designated historic structures and contributing properties should be incorporated into the Plan to the extent feasible.

In order to quantify specific environmental impacts associated with the Cargo Terminal proposed in Development Concepts 3 and 3A, the developer of the facility will need to determine that it is feasible to construct a port terminal at this location. Based on detailed hydrologic modeling and environmental studies to be carried out by the developer, extending the port facility further into the Cooper River may reduce shoaling and dredging expenses

required to maintain the channel and port facility. However, extending the pier line may also have environmental consequences in reducing the amount of light that can reach the water column which would affect the marine habitat. These studies will be completed by the developer during the engineering design and permitting process for the Cargo Terminal.

The Redevelopment Authority or the entity charged with redevelopment will also be responsible for preparation of a storm water management plan prior to redevelopment of the southern portion of the Base consistent with Stormwater Management and Sedimentation Act, Section 48-14-10 S.C. Code of Laws (1991).

Transportation

- Designated truck routes should be established on Base and in adjacent off-Base areas to minimize vehicular conflicts.
- Management techniques such as car pooling, van services, and improved bus or other transit service should be implemented which, over time, reduce potential vehicular trips.
- Shared parking programs should be managed to maximize land use efficiencies and minimize development costs.
- "Rails to trails" projects should be initiated as the proposed consolidation of existing railroad tracks is carried out.
- On-site bikeways should be linked into a single system with those in North Charleston.

Marine Cargo Terminal

The decision to allocate a significant portion of Charleston Naval Base for Marine Cargo Terminal as proposed in Development Concepts 3 and 3A, is contingent upon the implementation of an agreement with the developer of the facilities. Such an agreement must include the following general conditions:

- Active sponsorship and development of a Class A Marine Industrial Park, a minimum 150 acres, and a minimum goal of 3,500 employees;
- Placement of the Marine Industrial Park on the City of North Charleston tax rolls;
- Development of a world trade center as part of the office district;
- Mitigation of impacts from truck and rail access and port operations;

- Assumptions of capital costs for supporting infrastructure development required for maritime cargo operations;
- Contribution of fair share to the capital costs of infrastructure for the overall plan; and
- Contribution of resources to mitigate fiscal impact on North Charleston.

2.2.1 Future Actions

Several issues pertaining to the implementation of the Reuse Plan are currently unresolved. Many of these issues cannot be fully addressed at this time either because necessary studies and investigations are ongoing and have not been completed, the Redevelopment Authority has not taken formal action, or detailed engineering and design studies have not been prepared by responsible site redevelopers. These issues are identified herein in order to provide decision-makers with an understanding of key factors in reuse planning which cannot be fully evaluated at this time. These issues will continue to be addressed during the transfer of property and subsequent redevelopment.

Required Permits and Approvals

A list of the major federal, state, and local permits and approvals which would be required prior to redevelopment are provided in Table 2-1. The Navy will not be applying for permits since it is not the entity responsible for site redevelopment. Site redevelopment will be the responsibility of the Redevelopment Authority and, potentially, other entities which are charged by the Redevelopment Authority to develop specific components of the Plan (i.e., the Cargo Terminal). Once detailed engineering, planning, and design studies are prepared, the responsible developer will apply for appropriate permits.

Subsequent NEPA Documentation

This FEIS does not preclude the potential need for future review of specific components of the Reuse Plan pursuant to the National Environmental Policy Act (NEPA). All federal agencies must comply with NEPA prior to undertaking, approving, or funding an action which may result in significant environmental impacts. As such, any federal agency which is involved in the redevelopment of the Charleston Naval Base property must comply with NEPA and prepare either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) if determined appropriate. The Navy would be responsible for conducting additional NEPA documentation if the Preferred Development Plan is significantly

Table 2-1 MAJOR PERMITS AND APPROVALS REQUIRED FOR REDEVELOPMENT^a		
Permits and Approvals Required	Actions Requiring Permits or Approvals	Agencies Involved
Federal		
The Rivers and Harbors Act of 1899: Section 9 Permit, Section 10 Permit	Bridges and Other Structures Over Federal Navigable Waters	U.S. Coast Guard, Army Corps of Engineers
Marine Mammal Protection Act Approval	Development Potentially Disturbing Marine Mammal Habitats	U.S. Fish and Wildlife Service
Migratory Bird Treaty Act of 1974 Approval	Development Potentially Disturbing Migratory Bird Habitats	U.S. Fish and Wildlife Service
Clean Water Act Section 404 Permit	Loss of More Than 10 Acres of Wetland (IP) or Any Fill in U.S. Waters (NWP)	Army Corps of Engineers, S.C. Office of Ocean and Coastal Resources Management Certification
Clean Air Act, Amended 1990, Title 5 Air Operating Permit, Air Construction Permit	Construction and/or Operation of Air Emissions Source	S.C. Department of Health and Environmental Control
Endangered Species Act, Section 7 Approval	Disturbance of Threatened or Endangered Species	National Marine Fisheries Service, U.S. Fish and Wildlife Service
National Historic Preservation Act Section 106 Approval ^b	Development Affecting Resources Listed in the National Register of Historic Places	S.C. Department of Archives and History
NPDES General Construction Permit	Industrial Discharges	S.C. Department of Health and Environmental Control, U.S. Environmental Protection Agency
Interchange Construction Approval Environmental Impact Statement	Construction or Modification of a Interchange Impacting a Federal Highway	Federal Highway Administration
State		
Erosion and Sediment Reduction Act of 1983, (48-18-10 et. seq)	Land Disturbing Activities	Office of Oceans and Coastal Resources Management
New Access Permit, Approval	Road Realignments and Interchange Design	S.C. Department of Transportation
Coastal Zone Management Act, Coastal Zone Consistency Permit, (R-30:12-F, Transportation Section)	Alteration of Critical Areas of the Coastal Zone	S.C. Department of Health and Environmental Control, Office of Oceans and Coastal Resources Management
SCCZMP Policies for Dredging (III-55-III-56), Ports Development (III-19-III-21), Railroads (III-21-III-23), Permitting Rules and Regulations (Section 30-21A), Docks and Piers (Section 30-12G)	Construction within the S.C. Coastal Zone	Office of Oceans and Coastal Resources Management
Wetland Mitigation Plan Approval	Federally Defined Jurisdictional Freshwater Wetlands	Office of Oceans and Coastal Resources Management

Table 2-1 MAJOR PERMITS AND APPROVALS REQUIRED FOR REDEVELOPMENT^a		
Permits and Approvals Required	Actions Requiring Permits or Approvals	Agencies Involved
Stormwater Management and Sedimentation Act (Section 48-14-10) Stormwater Management Permit	Land Disturbing Activities	Office of Oceans and Coastal Resources Management
Local		
Zoning Review and Approval	Development Within the Affected Municipality	City of North Charleston
Wastewater Permit	Wastewater Discharges	City of North Charleston

Note: Please refer to Table 5-1 for other permits which may also apply.

- ^a Other permits and approvals may be necessary depending on specific components of the reuse plan which are not currently known (i.e., Hazardous waste treatment, storage, or disposal facility pursuant to S.C. Hazardous Waste Management Act). It is also possible that subsequent NEPA documentation may be required if the Reuse Plan is significantly modified during implementation.
- ^b As implemented by the terms and conditions of the Memorandum of Agreement between the Navy and the South Carolina Department of Archives and History.

modified prior to the title of the property in question being transferred to a new owner (e.g., the Redevelopment Authority). Following transfer of title by the Navy to another entity, other federal agencies (e.g., Corps of Engineers, Department of the Interior, etc) would be responsible for undertaking subsequent NEPA actions if warranted.

It should be noted that the State of South Carolina does not have laws or regulations requiring the preparation of Environmental Impact Statements.

Interim Leasing Arrangements

The Navy has indicated a willingness to lease portions of the Charleston Naval Base property to the Redevelopment Authority prior to the operational closure date of April 1, 1996. In fact, the marina has been leased to the Redevelopment Authority. As various commands relocate or are disestablished, lands and facilities at the Base can be made available for lease transfer. For example, interest has been expressed, through the BEST Committee, for the entire shipyard to be leased to one or more private entities which would assume responsibility for operations until closure, after which they would operate the facility as a private shipyard.

Many factors would affect the interim leasing of lands and facilities including the availability of requested property, status of environmental cleanup (including installation restoration, asbestos abatement, underground storage tanks/aboveground storage tanks [UST/ASTs], lead-based paint, etc.), nature of the specific request for property and proposed use, and the terms of the lease. Each of these factors would be influenced by events which will occur subsequent to the publication of this FEIS. As these events become defined, potential environmental concerns will be appropriately addressed in the Finding of Suitability to Lease (FOSL).

Status and Extent of Environmental Cleanup

The Navy, with USEPA and SCDHEC approval, is currently undertaking a comprehensive evaluation and investigation of site contamination at the Naval Base. The status and current findings of these studies is summarized in Section 3.13 and Appendix E of this FEIS. These investigations will continue following the completion of this FEIS. Therefore, final conclusions (i.e., corrective measure studies, Statement of Basis [SOB], etc.) are not currently available. Contingent upon the findings and recommendations of these investigations, future use of portions of the Base may be affected and may result in the Redevelopment Authority or another entity charged with the redevelopment of the property implementing Development Concepts 3A or 3B. Restrictions on the use of areas will be dependent upon the existence and

extent/type of contamination, method of remediation (i.e., removal, capping, pump and treat, etc.), the nature of the specific reuse proposal, the potential for human exposure to contamination, and the impacts the reuse may have on long-term monitoring of contaminated areas. As the extent of contamination at the Base is further defined (i.e., Resource Conservation and Recovery Act (RCRA) facility investigations, corrective measures studies), use of certain areas or structures may be limited or prohibited to accommodate remediation activities. Deed restrictions, pursuant to CERCLA Section 120 (h)(3)(B)(i), may be needed based on the results of ongoing environmental investigations and by the method of remediation selected.

Siting of Proposed Access Road and Rail Facility

The Development Concepts 3 and 3A include a provision to construct a transportation corridor that would include new road and rail interchanges with I-26 and the CSX and Norfolk Southern mainlines to the southern portion of the Base property to provide access to the proposed Intermodal Rail Yard and Cargo Terminal. Although these concepts provide conceptual drawings of the location of this new corridor, they do not take into account the potential contamination that exists on non-Navy property to be traversed. The nature and extent of this contamination, which has not been determined, would affect the final alignment of this route.

If this interchange is formally proposed (i.e., Phase I of the Port Development Process), the entity charged with redevelopment would need to work closely with USEPA, SCDHEC, OCRM, SCDOT, state/federal natural resource trustees, the City of North Charleston, and the local community in order to define an acceptable route given the knowledge of contamination and proximity to residential areas.

Also of concern regarding the siting of this access road and rail facility across Shipyard Creek are impacts to the ability of ships to access industries located upstream of the crossing. Limiting access to navigable waters will be addressed by OCRM and the U.S. Army Corp of Engineers in their permit reviews to be conducted during the design of this road and rail crossing.

The proposed construction of a rail and roadway bridge across Shipyard Creek as proposed in Concepts 3 and 3A would conflict with a policy of the South Carolina Coastal Zone Management Program. The aforementioned policy states that, within navigation channels, "development which would result in loss of navigability will be prohibited" (South Carolina Coastal Council undated). The development of such a bridge may preclude the movement of ship traffic in and out of the upper reaches of Shipyard Creek and would be addressed during the permit review. Mitigation could involve constructing a movable lift

bridge to allow vessel traffic to access the upper reach of Shipyard Creek, or negotiation of an agreement between affected land owners and the Redevelopment Authority to allow goods to be transported through the proposed Marine Cargo Terminal directly to industrial sites. This issue will need to be resolved by the Redevelopment Authority prior to seeking a Section 9 permit from the U.S. Coast Guard, and a coastal zone consistency determination from OCRM.

Development of Performance and Design Standards

In order to accomplish the goals and objectives of the proposed plan, a series of performance and design standards would be developed by the Redevelopment Authority (BEST 1994). The Reuse Plan provides a preliminary draft outline of the proposed standards. These proposed standards are summarized in Section 2 of this FEIS.

2.3 Alternative Reuse Scenarios

This FEIS evaluates three alternative reuse scenarios and the No-Action Alternative. Alternative Scenario 1 and Alternative Scenario 2 are modifications of plans initially developed by the BEST committee. These plans have been modified by the Navy to include uses for portions of the Base for which the initial BEST plans did not designate a use. Areas for which BEST had identified uses (i.e., shipyard, marina, community/human service providers, etc.) were not modified and are incorporated as originally proposed. The uses which were subsequently identified by the Navy are intended solely to propose potential land uses for the entire property being excessed. These uses were based on what was determined to be consistent with existing uses, consistent with use potential, consistent with existing zoning, and what is reasonably likely to occur. Under these scenarios, all lands not transferred to the Redevelopment Authority would be offered for public sale.

Alternative Reuse Scenario 3 was determined by BEST to be the Preferred Alternative, and is referred to herein as Development Concept 3. However, based on the preliminary findings and conclusions of ongoing site investigation and remedial studies, it has become evident that uses proposed for certain parts of the base may not be feasible given potential remedial activities, which will not be decided until after the EIS process has been completed. Therefore, the EIS and ROD will need to allow the Redevelopment Authority or another redevelopment entity the guidance and flexibility necessary to revise the plan at a later date, based on information not currently available. In addition, as a result of the environmental impact analysis of Development Concept 3, it also has become apparent that some adverse

impacts to wetlands, vegetation, and the Shipyard Creek buffer could be avoided by modifying the design and layout of Concept 3. Therefore, an optional Concept, which is essentially a realignment of the components of Concept 3, is addressed herein as Concept 3A.

Another concept, referred to as Development Concept 3B, is also included in this FEIS. Concept 3B was developed and included herein at the request of the City of North Charleston and the Redevelopment Authority in an effort to be responsive to development objectives of the City of North Charleston, the host community.

The Redevelopment Authority has endorsed the Preferred Alternative as Alternative Reuse Scenario 3, which includes three development concepts referred to as Development Concepts 3, 3A, and 3B. Each of these concepts entail the redevelopment of the entire 1,500 acre base by the Redevelopment Authority.

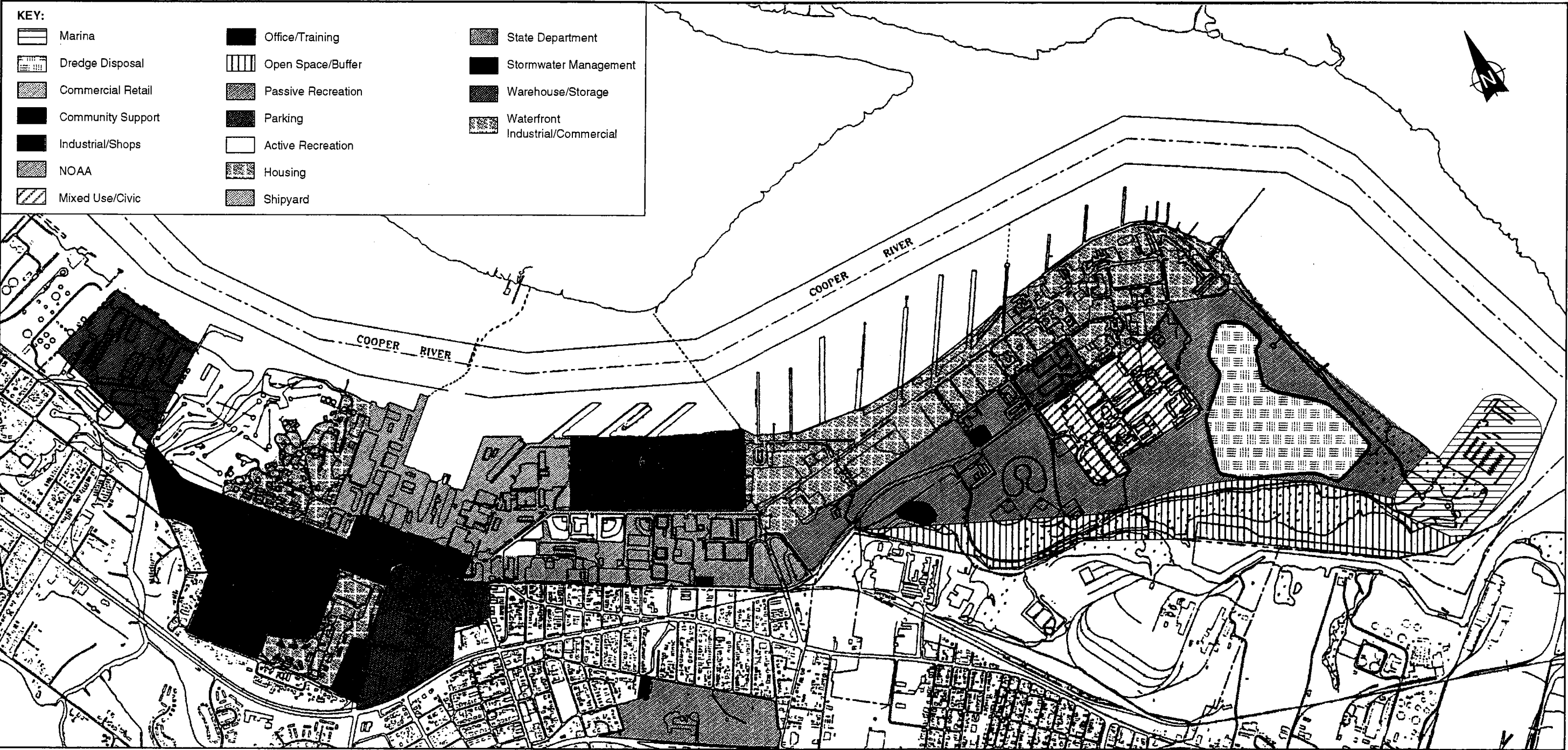
All reuse scenarios and the no action alternative are discussed in the following sections.

2.3.1 Alternative Reuse Scenario 1

The concept of this alternative plan is to maximize the use of the Base's existing land and facilities assets, consistent with public reuse proposals and the potential for private market support, while at the same time holding public investments to a minimum. This plan is shown on Figure 2-1 and summarized in Table 2-2. This plan stresses reuse of existing buildings, roads and utility facilities as they currently are configured for federal and other public uses which have been identified. No investment in improvements is shown beyond the minimum necessary to maintain operations. The land use concept of this alternative includes an office district utilizing the existing office buildings clustered near the McMillan Gate entrance to the Base including buildings 198, 234, and the old naval hospital. The existing office facilities that are readily usable comprise a total of approximately 400,000 square feet of space with a capacity for 1,600 to 2,400 office workers.

A shipyard and industrial district are identified between graving dock number 5 and pier K within the existing Controlled Industrial Area (CIA). Existing facilities within the proposed shipyard area contain approximately 750,000 square feet and have a physical capacity for 1,500 workers. Existing facilities within the proposed industrial area have a total of 800,000 square feet with a physical capacity for 2,500 to 3,500 workers.

In addition to those uses as proposed by BEST and discussed above, additional uses proposed in this plan include a 70-acre commercial/retail area in the western portion of the Base along Spruill Avenue, and a 200-acre waterfront industrial/commercial area which would



SOI IRCE: Best, 1994

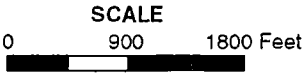


Figure 2-1 ALTERNATIVE REUSE SCENARIO 1

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Table 2-2 ALTERNATIVE REUSE SCENARIO 1		
Land Assets	Acres	Total Acres
Total Acres Available		1,575
• Office/training	22	—
• Mixed use/civic	90	—
• Industrial/Shops	68	—
• Shipyard	90	—
• Dredge material disposal	65	—
• Warehouse/storage	65	—
• Housing	95	—
• Community support	100	—
• Passive recreation	250	—
• Open space/storm water	150	—
• Commercial/retail	70	—
• Active recreation	250	—
• Parking	60	—
• Waterfront Industrial	200	—
Building Assets	Available (square feet)	Utilized (square feet)
Office/Training	1,682,000	630,640
Industrial/Shops	1,125,950	0 - 1,125,950
Warehouse/Storage	1,577,240	630,600
Housing	522,270	347,706
Community Support	170,560	140,600
Mixed Use/Civic	948,690	500,554

Table 2-2		
ALTERNATIVE REUSE SCENARIO 1		
Job Capacity Potential	From	To
Office/Training	1,900	2,200
Industrial/Shops	0	4,000
Shipyard	0	1,500
Port	0	—
Commercial/Retail	0	670
Cultural Park	0	—
Mixed Use/Civic	0	1,500
Totals	1,900	9,870
Cost ^a		Amount
On-site area-wide costs ^b		\$19,800,000
District-level improvement costs ^c		24,570,000
Subtotal		\$44,368,500
Optional: Active recreational and other landscape enhancements ^d		0
Total Cost		\$44,368,500

^a Detailed line item cost estimates are included in the BRP.

^b On-site area-wide costs are those that are assumed to be borne by the receiving entity. These costs include utilities (potable water, boilers, sanitary sewer, and storm water), power (steam pipe removal, relocation of air compressors, etc.), equipment moving, common parking, building demolition, mothballing, fence removal, open space storm water management, and area-wide roadway landscaping costs.

^c District level costs are those costs within each district that are assumed to be borne by a developer of that site. These costs include building renovation, on-site sewer, potable water, storm water management, mechanical, electrical, air conditioning, steam, internal roads, and landscaping costs.

^d These costs are those costs associated with the development of the active recreation districts, off-site road landscaping, and off-site bike trails. These costs are viewed as needed for community redevelopment efforts to enhance the site and assist in reintegrating the site into the city fabric of North Charleston but which are not viewed as baseline costs as they relate to a real estate development perspective of base use.

Source: BEST 1994.

utilize the existing piers for individual businesses involved with shipping/receiving, fisheries industry (i.e., process, freezing, etc.), commercial industries, or restaurants. Active recreational uses are expanded in the southern portion of the Base, and a large buffer area is retained along Shipyard Creek and around the existing dredge material disposal area. The 65-acre dredge material disposal area is also retained for future use.

The concept provides for use of existing recreation facilities and housing for the City of North Charleston, Charleston County, and the region's human service providers.

As proposed, approximately 500 acres would be redeveloped by the Redevelopment Authority, and the remaining lands would be offered for public sale by the Navy.

2.3.2 Alternative Reuse Scenario 2

The concept of this alternative plan is to promote office, industrial, and tourism development through public investment in infrastructure and amenities as a means to foster job development in the office district, shipyard, and industrial districts and a proposed mixed use civic waterfront district. This alternative is summarized in Table 2-3 and shown on Figure 2-2.

The land use strategy of this alternative is to bring regional tourism to the naval complex by the creation of a destination, mixed use, urban waterfront district encompassing a visitor center, large waterfront park, waterside destination restaurant, city marina, civic buildings, large flat floor exhibition space, naval history exhibit and supporting festival retail uses. A proposed cultural/historic park envisions the restoration of a portion of the Olmsted Park and the Turnbull Plantation with its formal gardens. The proposed civic facilities will adjoin and complement the cultural waterfront park and plantation and will be located at the navy yard's original, turn-of-the-century location. The proposed civic/cultural district would be accessed from a redeveloped Cosgrove Avenue and McMillan Avenue which would border at a large landscaped promenade in front of the old power plant building newly restored as a civic building. A total of 980,000 square feet of existing building space is available within the proposed mixed use civic waterfront district of which 572,000 acres is utilized.

Adjacent to the mixed use/civic district, the existing shipyard is proposed to be maintained as an employment generator. Activities within this district would include the restoration, conversion, new construction, and repair of ships and their associated equipment.

This alternative proposes landscape improvements and architectural renovation in the proposed office district in order to create a Class A office park. A campus atmosphere will be created with a landscaped quadrangle and new adjacent parking areas. These improve-

Table 2-3		
ALTERNATIVE REUSE SCENARIO 2		
Land Assets	Acres	Total Acres
Total Acres Available		1,575
• Office/training	190	—
• Mixed use/civic	52	—
• Industrial/Shops	89	—
• Shipyard	69	—
• Warehouse/storage	70	—
• Housing	35	—
• Community support	25	—
• Passive recreation	200	—
• Open space/storm water	150	—
• Cultural Park	170	—
• Waterfront Industrial/Commercial	300	—
• Active recreation	200	—
• Parking	25	—
Building Assets	Available (square feet)	Utilized (square feet)
Office/Training	1,682,000	1,331,706
Industrial/Shops	1,125,950	0 - 1,125,950
Warehouse/Storage	1,577,240	630,600
Housing	522,270	200,000
Community Support	170,560	80,600
Mixed Use/Civic	948,690	572,760

Table 2-3		
ALTERNATIVE REUSE SCENARIO 2		
Job Capacity Potential	From	To
Office/Training	2,000	5,327
Industrial/Shops	0	4,000
Shipyards	0	1,500
Cultural Park	0	25
Mixed Use/Civic	0	500
Totals	2,000	11,352
Costs ^a		Amount
On-site area-wide costs ^b		\$52,570,300
District-level improvement costs ^c		\$70,700,000
Subtotal		\$123,270,000
Optional: Active recreational and other landscape enhancements ^d		\$41,700,000
Total Cost		\$164,970,000

^a Line item cost estimates are included in the BRP.

^b On-site area-wide costs are those costs that are assumed to be borne by the receiving entity. These costs include utilities (potable water, boilers, sanitary sewer, and storm water), power (steam pipe removal, relocation of air compressors, etc.), equipment moving, common parking, building demolition, mothballing, fence removal, open space storm water management, and area-wide roadway landscaping costs.

^c District level costs are those costs within each district that are assumed to be borne by a developer of that site. These costs include building renovation, on-site sewer, potable water, storm water management, mechanical, electrical, air conditioning, steam, internal roads, and landscaping costs.

^d These costs are those costs associated with the development of the active recreation districts, off-site road landscaping, and off-site bike trails. These costs are viewed as needed for community redevelopment efforts to enhance the site and assist in reintegrating the site into the city fabric of North Charleston but which are not viewed as baseline costs as they relate to a real estate development perspective of base use.

Source: BEST 1994.

ments will more than double office space availability to more than 1,331,000 square feet with a physical capacity of 4,000 to 5,327 office workers.

This plan also provides for comprehensive and integrated drainage and open space program. The drainage/open space concept is designed to provide storm water detention and to restore natural drainage patterns back to the Cooper River and to utilize the resulting open spaces for recreation and pedestrian linkages to the proposed new waterfront parks from the Chicora, Union Heights, and Park Circle neighborhoods of North Charleston. Over 600 acres are proposed to be incorporated into the master open space and park system for active and passive recreation.

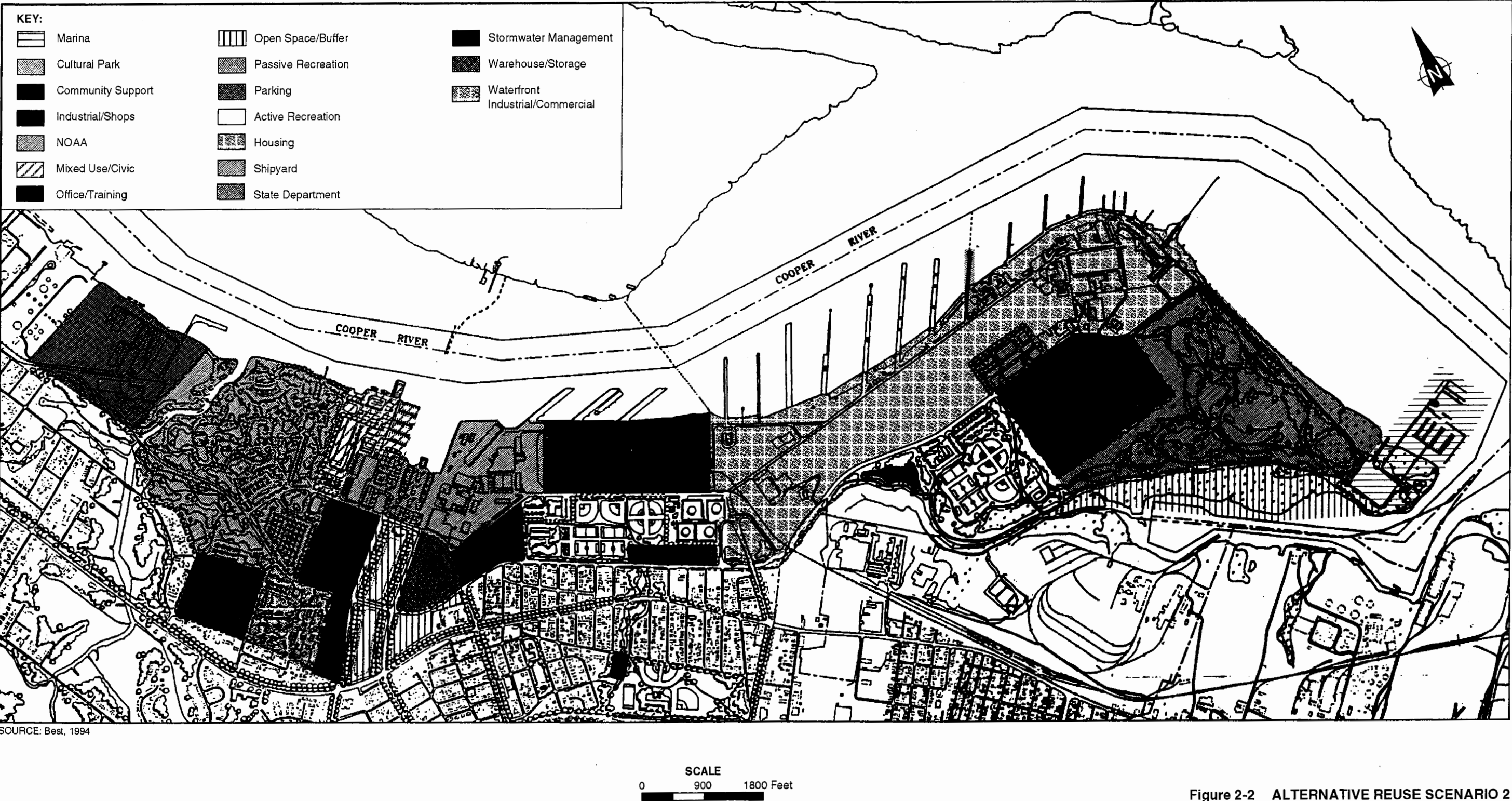
In addition to those uses as proposed by BEST and discussed above, additional uses proposed in this plan include a 300-acre waterfront industrial/commercial district (similar to that proposed in Alternative Reuse Scenario 1). In addition, nearly 90 acres of additional office/training uses, and expanded parks and recreation areas are proposed for the southern portion of the base.

As proposed, approximately 1,000 acres would be redeveloped by the Redevelopment Authority or another entity charged with redevelopment and the remaining lands would be offered for public sale by the Navy.

2.3.3 Alternative Reuse Scenario 3: Development Concept 3

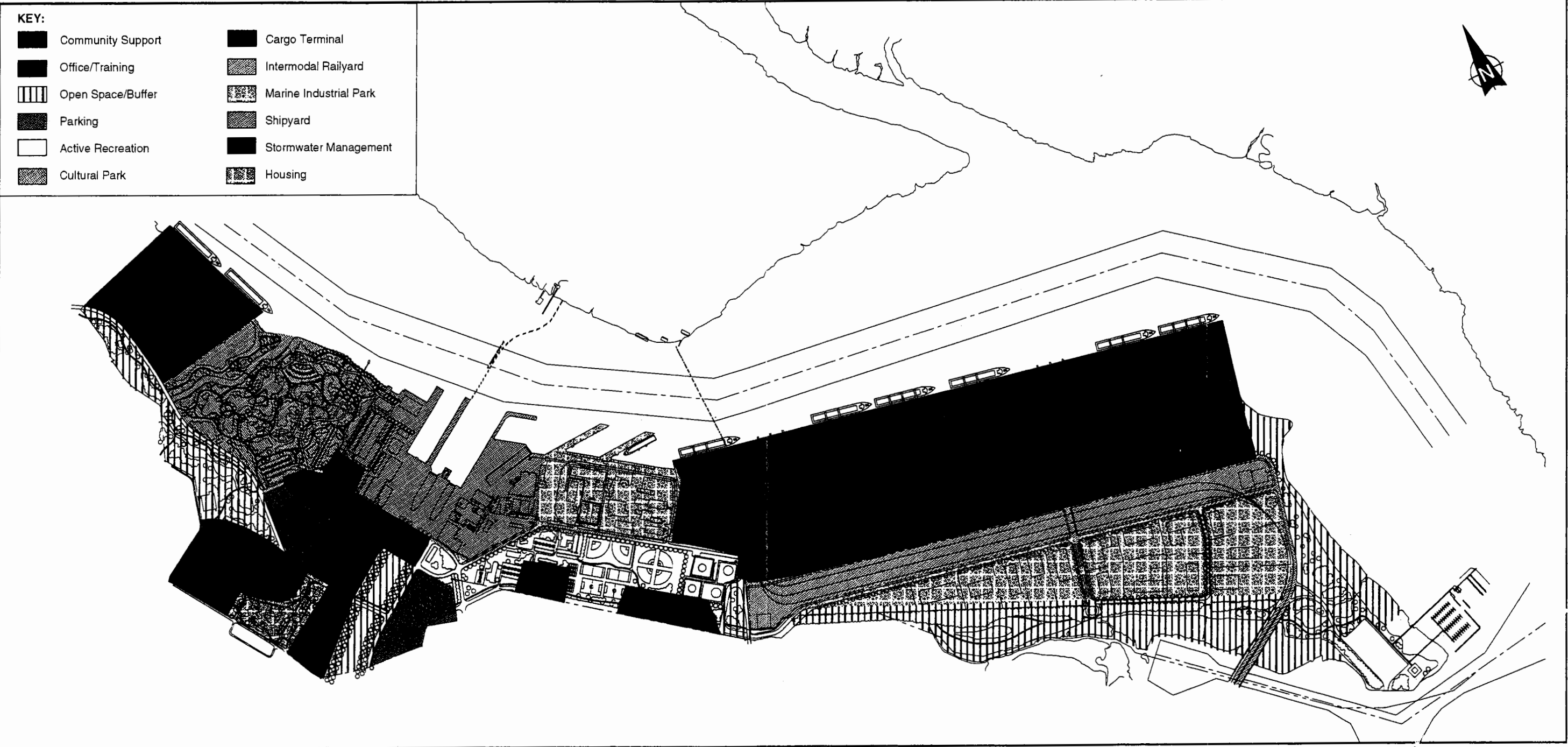
This Concept balances civic and community land use with a job-creating office, shipyard industrial, and maritime uses including an integrated Cargo Terminal and Marine Industrial Park. It is designed to support the community's goals of retaining and creating jobs for existing shipyard workers by retaining all existing shipyard and industrial capacity. Concept 3 is shown on Figure 2-3 and summarized in Table 2-4. Figure 2-4 provides an illustration of Development Concept 3. All property at the Base would be redeveloped by the Redevelopment Authority or another entity charged with redevelopment.

Five major employment centers of 762 total acres are proposed in the this concept: an office district, shipyard district, marine industrial district (within the existing Controlled Industrial Area [CIA]), new Class A Marine Industrial Park, and an intermodal cargo port district. In addition to the open space areas, three districts totaling 88 acres are also proposed for major community support activities. These districts will provide building facilities for civic and social uses including the programs of the region's social service providers. It is the goal of the plan to provide opportunity for both the short- and long-term programs of the community/human services providers (see Appendix B).



SOURCE: Best, 1994

Figure 2-2 ALTERNATIVE REUSE SCENARIO 2



SOURCE: BEST 1994

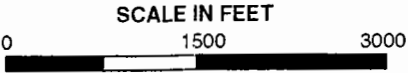


Figure 2-3 DEVELOPMENT CONCEPT 3
CHARLESTON NAVAL BASE

<p>Table 2-4</p> <p>ALTERNATIVE REUSE SCENARIO 3:</p> <p>DEVELOPMENT CONCEPT 3</p>		
Land Assets	Acres	Total Acres
Total Acres Available		1,625
• Maritime Cargo	80	-
• Cultural park	116	-
• Office/training	71	-
• Housing	27	-
• Shipyard/maritime/warehouse	97	-
• Community support	61	-
• Active recreation	33	-
• Tank farm	16	-
• Marine industrial area	69	-
• Open space	199	-
• Storm water management	20	-
• Active recreation marina	35	-
• Active recreation (Tank farm off base)	27	-
• Parking	93	-
• Maritime Cargo Terminal ^a	395	-
• Maritime Industrial Park	210	-
• Intermodal Rail Yard	108	-
Building Assets	Available (square feet)	Utilized (square feet)
Office/Training	1,682,000	1,057,911
Industrial/Shops	1,125,950	1,057,911
Warehouse/Storage	1,577,240	1,371,681
Housing	522,270	105,328
Community Support	170,560	110,609
Mixed Use/Civic	948,690	359,567
Marine Industrial Park	0	2,200,000

Table 2-4		
ALTERNATIVE REUSE SCENARIO 3: DEVELOPMENT CONCEPT 3		
Job Capacity Potential	From	To
Office/Training	3,800	3,800 ^b
Industrial/Shops	4,000	4,000 ^b
Shipyard	500	2,500 ^c
Port	800	1,300 ^c
Totals	9,100	11,600
Costs ^c		Amount
On-site area-wide costs ^d		\$ 93,710,000
District-level improvement costs ^f		\$904,000,000
Subtotal		\$967,710,000
Optional: Active recreational and other landscape enhancements ^g		\$24,300,000
Total Cost		\$992,010,000

^a Includes 82 acres of open water.

^b Employment estimates for this category represent new or retained jobs within the region based upon reasonable physical capacity of facilities and full market absorption within 20 years. High end of employment estimates are based on reasonable physical capacity of facilities; low end estimates are based on likely market demand within 20 years.

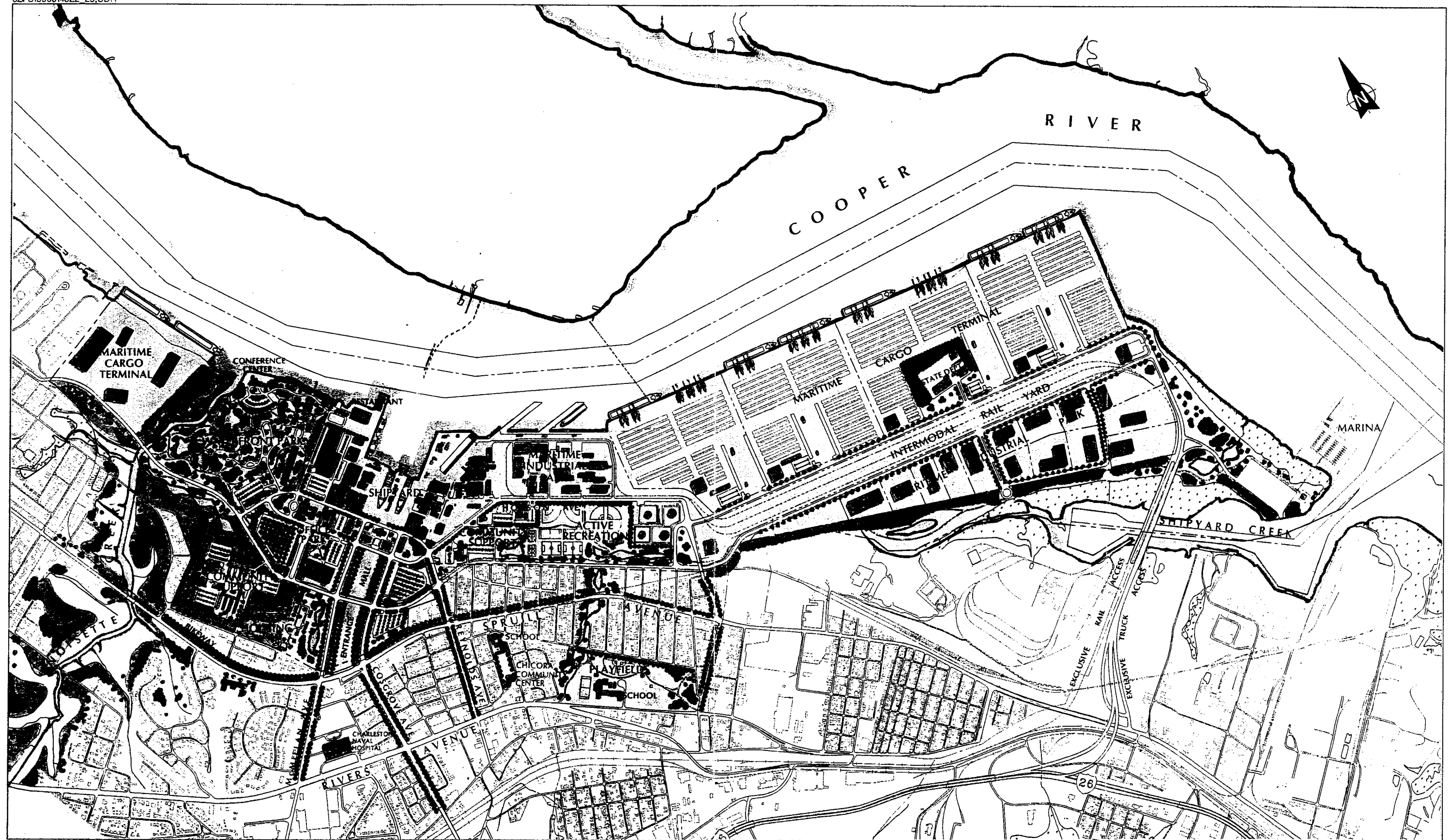
^c Line item cost estimates are included in the BRP.

^d On-site area-wide costs are those costs that are assumed to be borne by the receiving entity. These costs include utilities (potable water, boilers, sanitary sewer, and storm water), power (steam pipe removal, relocation of air compressors, etc.), equipment moving, common parking, building demolition, mothballing, fence removal, open space storm water management, and areawide roadway landscaping costs.

^e District level costs are those costs within each district that are assumed to be borne by a developer of that site. These costs include building renovation, on-site sewer, potable water, storm water management, mechanical, electrical, air conditioning, steam, internal roads, and landscaping costs. These costs include the development of a maritime cargo facility.

^f These costs are those costs associated with the development of the active recreation districts, off-site road landscaping, and off-site bike trails. These costs are viewed as needed for community redevelopment efforts to enhance the site and assist in reintegrating the site into the city fabric of North Charleston but which are not viewed as baseline costs as they relate to a real estate development perspective of base use.

Source: BEST 1994.



**Figure 2-4 DEVELOPMENT CONCEPT 3
ILLUSTRATIVE PLAN**

This Concept includes a shipyard/maritime/warehouse district occupying 97 acres. This features a shipyard that would maintain industrial activities related to the production/repair/conversion of ships, while the maritime industrial area would provide spinoff activities in support of the shipyard. Associated industrial land uses such as steel stockyards, production and fabrication shops, building docks/slips/berths, welding/plating and electroplating booths, and other uses supporting shipbuilding activities are anticipated to be generated within this district.

A major Marine Cargo Terminal integrated with a Class A Industrial Park is proposed for the southern half of the Base. Full development of the proposed port would allow as many as eight ships to be berthed simultaneously for containers, and additional ships for roll-on/roll-off and break-bulk operations. The port and Marine Industrial Park are proposed to be served with new interstate highway access from the Spruill interchange on I-26 and new rail connections directly to the mainline of the CSX and Norfolk Southern rail lines. The proposed layout of the port and Marine Industrial Park, with its direct links to the interstate highway system and the main lines of the region's principal railroads, has the potential to become a premier port on the east coast of the United States, giving it an important competitive edge.

The proposed new 210-acre Maritime Industrial Park has the potential to accommodate 2.0 million square feet of industrial space for up to 4,000 workers. In addition, 50 acres of existing shops in the CIA would be retained for intermediate and long-term job development. In this area, the Redevelopment Authority is seeking to privatize the existing shops. The area has the capacity for 2,000 jobs. Full development of the proposed port facilities and Marine Industrial Park is expected to be phased over a 20- to 30-year period in response to growth of the port's activities.

Significant new road and rail improvements are proposed for the Naval Base Charleston under this plan. The existing McMillan and Cosgrove Avenues will be the principal means of access to the office district, shipyard, and marine industrial district in the existing CIA. Major landscape and aesthetic improvements are proposed for both streets. Additionally, Cosgrove Avenue is proposed to be realigned as it enters the property to provide direct access to the core districts at the center of the Base.

Virginia Avenue is proposed to be extended south to the Viaduct Gate at Burton Road in order to provide enhanced access to the office district and to provide community access to the proposed new community facilities and recreation area around Cochrane Hall. The new street will visually open and make the property publicly accessible as well as connect the

existing streets of the adjoining Chicora neighborhood which currently dead-end at the existing fenceline.

At the southern end of the existing Base, the port functions and new Marine Industrial Park are proposed to be served by a new transportation corridor which includes new highway access from a redesigned Spruill Avenue interchange to Route I-26 and new rail access from the main lines of the CSX and Norfolk Southern lines. New grade separations are proposed for the main rail lines at Montague and Dorchester avenues. Comprehensive utility improvements also will be required to service the multiple land uses.

Over 30% of the land in this concept is proposed as open space that will include waterfront parks, play fields, and open space associated with improvements to storm water drainage. A 116-acre cultural park is proposed on the Cooper River. The proposed park envisions the creation of formal visitation gardens on the site of the old Turnbull Plantation. Other large houses are retained in the park and have the potential to be operated as an inn in association with a conference center in the former officers' club facility. Smaller homes are proposed to be relocated or removed. A 27-acre recreation area is proposed to be developed around the existing school in the area currently occupied by the Chicora tank farm. A major community support district is proposed to be created around Cochrane Hall. The existing buildings would be utilized for various community activities and an adjoining complex of recreation fields would be developed.

A feature of this concept is the comprehensive drainage/open space program designed to provide storm water detention and to restore natural drainage patterns to the Cooper River. These greenways will create open spaces for recreation and pedestrian/biking linkages to the new waterfront parks from the Chicora, Union Heights, and Park Circle neighborhoods of North Charleston. Of the Base's total 1,575 acres, over 470 acres are proposed to be redeveloped as active and passive recreation.

2.3.3.1 Alternative Reuse Scenario 3: Development Concept 3A

Development Concept 3A is similar to Concept 3, particularly as it relates to the development of the northern portion of the Base. However, this plan revises the layout of the proposed Cargo Terminal, Intermodal Rail Yard, and Marine Industrial Park at the southern portion of the Base to further minimize impacts to environmentally sensitive areas, including wetlands and vegetative buffer along Shipyard Creek. Also, Concept 3A avoids areas that may not be able to be cleaned up to levels which would permit planned reuse (i.e., SWMU 9 and SWMU 14). Development Concept 3A, as shown on Figure 2-5 and summarized in

Table 2-5, is revised from the conceptual layout provided in the DEIS to improve the efficiency of moving goods.

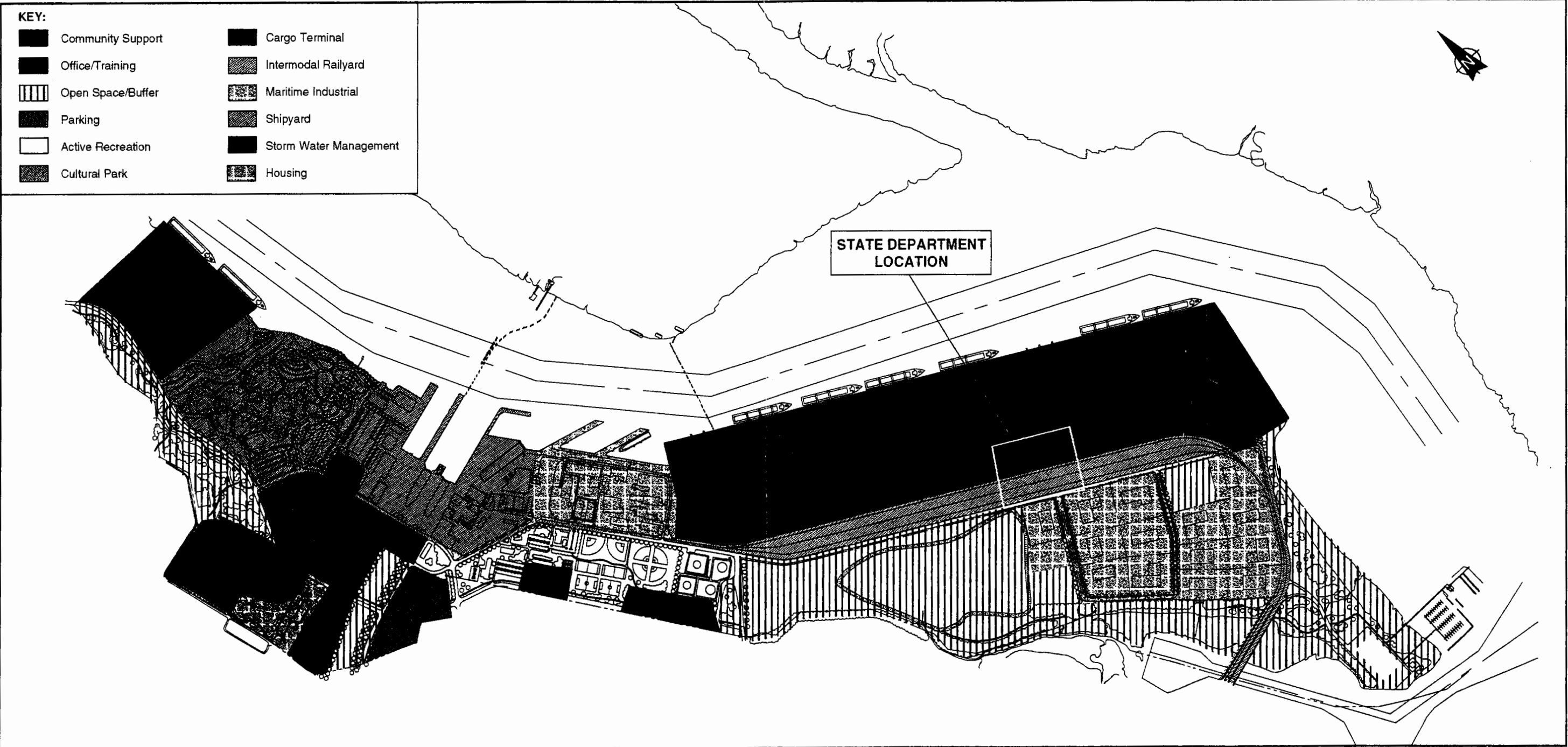
As with Concept 3, Concept 3A includes the major employment centers, including an office district, shipyard district, Marine Industrial Park, and Intermodal Rail Yard. All uses proposed by Concept 3 on the northern half of the Base are identical to those proposed in Concept 3A. The primary difference between the two plans is the design and layout of uses in the southern portion of the Base.

The conceptual layout of Plan 3A, as provided in the FEIS, has been revised to incorporate comments regarding the efficient movement of goods from ship to rail. In order to move the Intermodal Rail Yard to the west and keep it on the backside of the Cargo Terminal, the State Department will be required to relocate (see Figure 2-5). Although a new location for the State Department has not been determined, the department will be relocated to available facilities by the developer of the Cargo Terminal, at no cost to the State Department (Charleston Naval Complex Redevelopment Authority 1995e). Moving the Cargo Terminal/Rail Yard to the east and moving the State Department also allows for the Marine Industrial Park to be redesigned to avoid substantial wetland areas, SWMUs 14 and 9, and allows for a greater vegetative buffer along Shipyard Creek.

Concept 3A would impact approximately 9.3 acres of wetlands. It also would provide approximately 50 additional acres of open space, consisting primarily of SWMU 9. This would allow for the potential reestablishment of the wading bird colonies which were destroyed during Hurricane Hugo.

To allow for this shifting of functional areas, while still providing similar acreage (to be consistent with the goals and objectives of the Concept 3), Concept 3A proposes extending the Cargo Terminal an additional 200 feet into the Cooper River, which will result in an additional 50 acres being impacted (a total of 132 acres of open waters would be affected). As proposed, the Cargo Terminal would be located approximately 150 feet from the maintained channel and thus, Plan 3A would likely require less maintenance dredging than Alternative 3.

All other components of Concept 3A (i.e., employment, cost, economic benefits, and traffic projections, etc.) are similar to the Concept 3 (Alternative 3). As with Concept 3, the entire Base would be redeveloped by the Redevelopment Authority or another entity charged with redevelopment.



SOURCE: BEST 1994; Ecology and Environment, Inc. 1994

Figure 2-5 DEVELOPMENT CONCEPT 3A
CHARLESTON NAVAL BASE

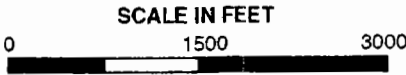


Table 2-5 ALTERNATIVE REUSE SCENARIO 3: DEVELOPMENT CONCEPT 3A		
Land Assets	Acres	Total Acres
Total Acres Available		1,710
• Maritime Cargo	80	—
• Cultural park	116	—
• Office/training	71	—
• Community support	61	—
• Housing	27	—
• Shipyard/maritime/warehouse	97	—
• Active recreation	33	—
• Tank farm	16	—
• Marine industrial area	69	—
• Open space	239	—
• Storm water management	20	—
• Marina	35	—
• Active recreation (Tank farm off base)	27	—
• Parking	43	—
• Maritime Cargo Terminal ^a	448	—
• Maritime Industrial Park	220	—
• Intermodal Rail Yard	108	—
Building Assets	Available (square feet)	Utilized (square feet)
Office/Training	1,682,000	1,057,911
Industrial/Shops	1,125,950	1,057,911
Warehouse/Storage	1,577,240	1,371,681
Housing	522,270	105,328
Community Support	170,560	110,609
Mixed Use/Civic	948,690	359,567
Marine Industrial Park	0	2,200,000

Table 2-5 ALTERNATIVE REUSE SCENARIO 3: DEVELOPMENT CONCEPT 3A		
Job Capacity Potential	From	To
Office/Training	3,800	3,800 ^b
Industrial/Shops	4,000	4,000 ^b
Shipyards	500	2,500 ^d
Port	800	1,300 ^d
Totals	9,100	11,600
Costs^d		Amount
On-site area-wide costs ^e		\$ 93,710,000
District-level improvement costs ^f		\$904,000,000
Subtotal		\$967,710,000
Optional: Active recreational and other landscape enhancements ^g		\$24,300,000
Total Cost		\$992,010,000

^a Includes 135 acres of open water.

^b Employment estimates for this category represent new or retained jobs within the region based upon reasonable physical capacity of facilities and full market absorption within 20 years.

^c High end of employment estimates are based on reasonable physical capacity of facilities; low end estimates are based on likely market demand within 20 years.

^d Line item cost estimates are included in the BRP.

^e On-site area-wide costs are those costs that are assumed to be borne by the receiving entity. These costs include utilities (potable water, boilers, sanitary sewer, and storm water), power (steam pipe removal, relocation of air compressors, etc.), equipment moving, common parking, building demolition, mothballing, fence removal, open space storm water management, and areawide roadway landscaping costs.

^f District level costs are those costs within each district that are assumed to be borne by a developer of that site. These costs include building renovation, on-site sewer, potable water, storm water management, mechanical, electrical, air conditioning, steam, internal roads, and landscaping costs. These costs include the development of a maritime cargo facility.

^g These costs are those costs associated with the development of the active recreation districts, off-site road landscaping, and off-site bike trails. These costs are viewed as needed for community redevelopment efforts to enhance the site and assist in reintegrating the site into the city fabric of North Charleston but which are not viewed as baseline costs as they relate to a real estate development perspective of base use.

Source: BEST 1994.

2.3.3.2 Alternative Reuse Scenario 3: Development Concept 3B

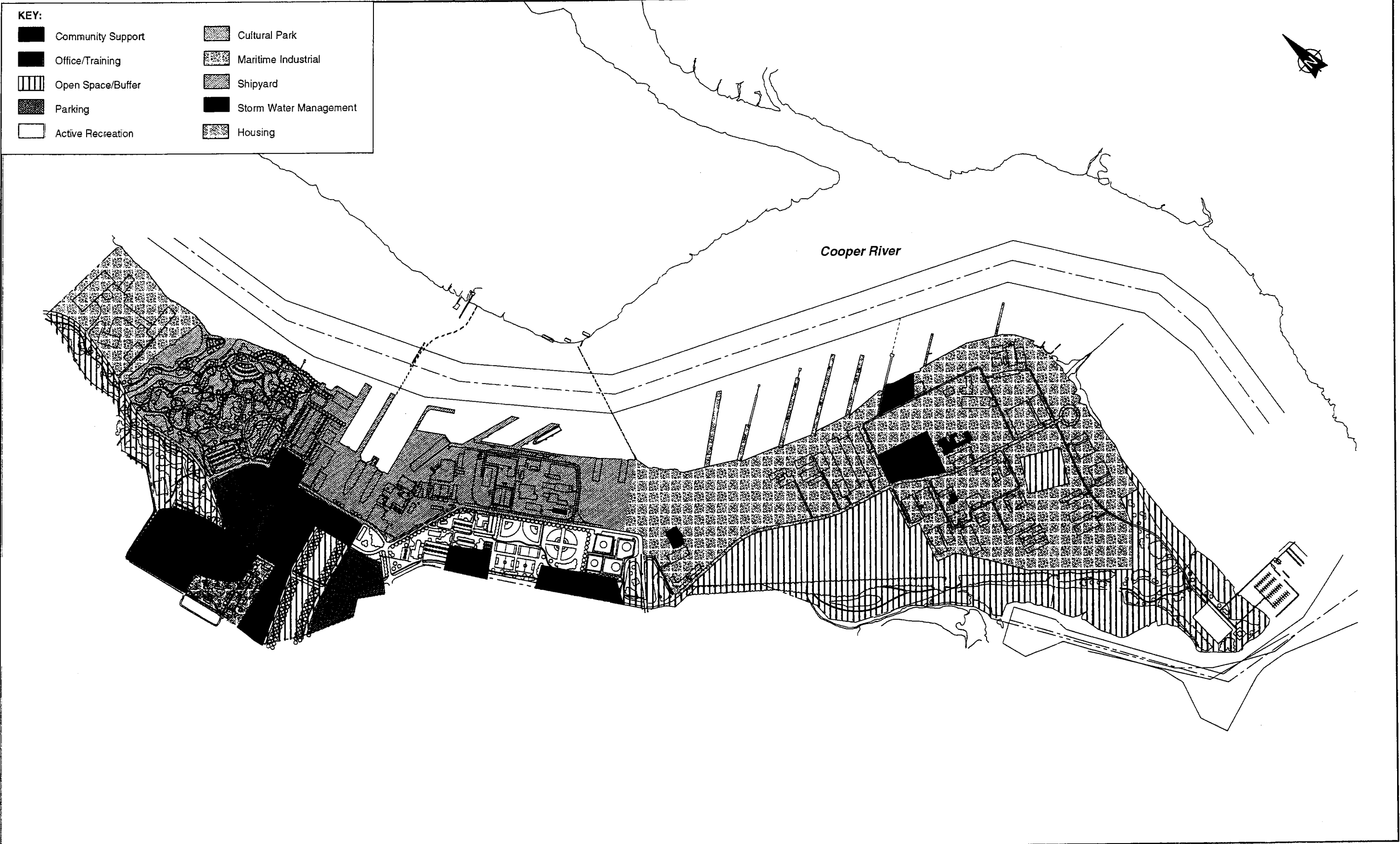
Concept 3B is a further refinement of Concept 3A. However, this Concept changes 3A's emphasis on the development of a Maritime Cargo Terminal and supporting facilities, replacing it with an emphasis on reusing and expanding the existing shipyard facilities at the base by private enterprise, and supporting it through the development of maritime industrial facilities intended to support shipyard activities. Figure 2-6 is an illustrative site plan of this scenario (Charleston Naval Complex Redevelopment Authority 1995a).

Like Concept 3A, Concept 3B avoids contaminated areas (i.e., SWMUs 14 and 9) and substantial wetland areas, and provides a large vegetative buffer along Shipyard Creek. However, because no Maritime Cargo Terminal is included, Concept 3B retains the existing shoreline of the Cooper River and does not involve construction in, or filling at, the Cooper River. Further, because Concept 3B does not include the creation of an Intermodal Rail Yard intended to support a terminal, it does not contain potential impacts of constructing a rail/road access crossing over Shipyard Creek.

Development Concept 3B is based on two assumptions:

- The Redevelopment Authority will implement necessary capital investments to make the property permitted under local law and transform the Base into a reasonable environment for commercial and industrial tenants; and
- The existence of the Base's physical plant characteristics and access to a well-trained regional labor pool, both related to past shipbuilding activities at the Charleston Naval Base, will attract private shipbuilding, ship repairing, and allied support industries to locate at the redeveloped property.

Concept 3B provides for the continuation of land uses such as office/training, community support, and shipyard and maritime uses, and introduces new land uses that are intended to provide additional amenities, community access, and safety (i.e., storm water management). Three new major employment centers are proposed including an office district of 70 acres; a shipyard district of 175 acres; and two maritime industrial districts totaling 525 acres. In addition to these employment centers, a 115 acre waterfront cultural park is proposed (as in Plan 3A). Land use activities within and adjacent to the cultural park include a conference center, visitor/exhibition center, restaurant, and formal gardens, restored from a portion of the base containing the former Olmsted Park and Turnbull Plantation. Land use relationships of this Concept and acreages devoted to each land use type are presented in Table 2-6.



SOURCE: Ecology and Environment, Inc. 1995.



Figure 2-6 DEVELOPMENT CONCEPT 3B
CHARLESTON NAVAL BASE

Table 2-6		
ALTERNATIVE REUSE SCENARIO 3: DEVELOPMENT CONCEPT 3B		
Land Assets	Acres	Total Acres
Total Acres Available		1,575
• Cultural Park	115	—
• Office/training	70	—
• Housing	25	—
• Shipyard	175	—
• Community Support	60	—
• Active Recreation	70	—
• Active Recreation (former off-base tank farm)	30	—
• Tank Farm	15	—
• Maritime Industrial	525	—
• Open Space	380	—
• Stormwater Management	20	—
• Parking	90	—
Building Assets	Total Reused (square feet)	
Office/Training	1,515,924	
Industrial/Shops	1,100,580	
Warehouse/Storage	1,535,328	
Housing	290,328	
Community Service	165,690	
Mixed Use/Civic	720,789	
Employment Category	From	To
Office/Training	2,000	5,327 ^a
Industrial/Shops	0	3,676 ^a
Shipyard	0	2,816 ^a
Cultural Park	0	25 ^a
Mixed Use/Civic	0	500
Total	2,000	12,344

<p align="center">Table 2-6</p> <p align="center">ALTERNATIVE REUSE SCENARIO 3:</p> <p align="center">DEVELOPMENT CONCEPT 3B</p>	
Costs^b	Amount (\$)
On-site area wide costs ^c	55,726,347.00
District-level improvement costs ^d	136,526,831.15
Subtotal	192,253,178.15
Optional: Active recreational and other landscape enhancements ^e	17,000
Total Costs	209,253,178.15

^a Employment estimates for this category represent new or retained jobs within the region based upon reasonable physical capacity of facilities and full market absorption within 20 years. High end of employment estimates are based on reasonable physical capacity of facilities; low end estimates are based on likely market demand within 20 years.

^b Line item cost estimates are included in the Technical Memo for a Development Plan as prepared for the Redevelopment Authority.

^c On-site area-wide costs are those costs that are assumed to be borne by the receiving entity. These costs include utilities (potable water, boilers, sanitary sewer, and storm water), power (steam pipe removal, relocation of air compressors, etc.), equipment moving, common parking, building demolition, mothballing, fence removal, open space storm water management, and areawide roadway landscaping costs.

^d District level costs are those costs within each district that are assumed to be borne by a developer of that site. These costs include building renovation, on-site sewer, potable water, storm water management, mechanical, electrical, air conditioning, steam, internal roads, and landscaping costs. These costs include the development of a maritime cargo facility.

^e These costs are those costs associated with the development of the active recreation districts, off-site road landscaping, and off-site bike trails. These costs are viewed as needed for community redevelopment efforts to enhance the site and assist in reintegrating the site into the city fabric of North Charleston but which are not viewed as baseline costs as they relate to a real estate development perspective of base use.

Source: Department of the Navy 1995.

Significant public investment in infrastructure and amenities will be necessary to leverage shipyard, maritime industrial, office, and tourism development. Concept 3B assumes major capital investment in road and utility infrastructure, parking, building renovation, and landscaping. The existing McMillan and Cosgrove Avenues will be the principal means of access to the office, shipyard, and maritime industrial districts. Significant landscaping treatments (e.g., lawn areas, street trees) are proposed for both avenues. The scenario also assumes major off-site capital investment along Cosgrove Avenue up to Interstate I-26, and new roadway improvements along Virginia Avenue, Spruill Avenue, Reynolds Avenue, and Burton Avenue. Other improvements include conversion of rail rights-of-way into bike/pedestrian trails. However, Concept 3B does not include a road/rail access across Shipyard Creek to I-26 and CSX mainline rail corridor as is proposed under Concepts 3 and 3A.

Buildings and facilities owned by the state department and NOAA will remain, and their relocation will not be necessitated as with Concepts 3 and 3A.

2.4 No-Action Alternative

For the purpose of this FEIS, the following constitutes the No-Action Alternative: Naval Base Charleston is closed; all military activities are relocated or terminated; and the land is not disposed, but remains U.S. government land. Implementation of the No Action Alternative is not consistent with President Clinton's 5-Part Plan for Revitalizing Base Closure Communities implemented by Title XXIX of the National Defense Authorization Act for Fiscal Year 1994, Public Law 103-160 ("The Pryor Amendment"). In addition, the No Action Alternative would result in the entire 1,500-acre property becoming vacant, with no concerted effort at reuse and redevelopment. This would not benefit the Navy in that they would retain ownership and liability for property with no functional, operational, or strategic value, and it would not benefit the local community since it would remove any possibility of viable and productive use of this land. Therefore, it is determined that this alternative is not practicable nor reasonable.

2.5 Comparison of Environmental Impacts

Table 2-7 summarizes the environmental impacts of each alternative reuse scenario. These impacts are discussed in greater detail throughout Section 4 of this FEIS.

Of the alternative scenarios evaluated, the No Action Alternative would result in the least impacts on the natural environment. Alternative Reuse Scenario 3: Development

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
Land Use and Aesthetics	<p>This scenario provides for the redevelopment of the property utilizing a mixture of existing facilities and new developments. It establishes a waterfront attraction featuring a mixture of land uses. In addition, land has been designated for a regional commercial/retail center. The abundance of open space and recreational lands should provide for increased outdoor opportunities for the public, as well as improved aesthetics for the property. The existing dredge disposal area at the southern portion of the property is also allowed to remain for continued use as a dredge disposal site by another owner. This alternative would not impact existing contaminated areas and does not provide for landscaping improvements. No significant aesthetic improvements are included in this scenario. Mitigation measures include developing an effective reuse strategy by coordinating capital improvements with land use decisions in light of the on-going contamination investigation.</p>	<p>Plan provides for redevelopment of the property for industrial/economic development and for open space/storm water management. Southern portion of the property is proposed for open space/storm water management, active recreation and unutilized space. Waterfront industrial/commercial use is also proposed (i.e., local fisheries processing use, etc.). Northern portion of the property is proposed for warehouse storage uses as opposed to a marine cargo terminal (as in the preferred plan). Would not result in land use impacts to local community since no new rail/highway connection to/from I-26 is proposed. Waterfront commercial or industrial areas would not impact or be impacted by the contamination at the southern part of the base. This alternative provides for some landscape improvements and long-term aesthetic improvements. Mitigation measures include developing an effective reuse strategy by coordinating capital improvements with land use decisions in light of the on-going contamination investigation.</p>	<p>Development Concept 3: Plan is consistent with adjacent and internal land uses. Plan includes open space/storm water management buffer between off-site residential areas. Would require new rail/highway interchange with I-26 through adjacent land uses, potentially including residential areas. Mix of housing, community service and open space uses in the western portion of the property are consistent with adjacent off-site land uses. Existing contamination would impact design and layout of the intermodal rail yard and industrial park. Use of housing/community service facilities in the southern part of the property by McKinney Act providers and NCCC would conflict with and be inconsistent with long-term development of the Cargo/Port terminal, but could be addressed via interim leases and providing equivalent facilities at other locations as development proceeds. Cultural Park and open space areas would promote public use of waterfront. Proposed landscaping would result in long-term aesthetic improvements to the site.</p> <p>Development Concept 3A. Although Development Concept 3A includes similar land use districts and employment centers as does the Concept 3, it would affect different land use/vegetative cover. Of note is the reduction of wetland loss from 20.5 acres to 9.3 acres. The increase in recreational land use is attributable to the larger buffer area along Shipyard Creek. By avoiding SWMU 9 and SWMU 14, this plan avoids the internal land use inconsistency which is evident with the Concept, however a similar concern exists with respect to the need for long-term relocation of some McKinney Act providers to allow for the proposed Marine Cargo Terminal. This Plan includes the same road/rail access across Shipyard Creek as does Concept 3. Consistency with external land uses is similar to those for the Concept. Mitigation measures for Concepts 3 and 3A involve implementing an effective land use plan, development controls, and capital improvements program while coordinating specific land use developments with ongoing contamination investigations.</p>	<p>Land use would become primarily vacant. McKinney Act providers would occupy requested space and some nonintensive use of other areas would eventually occur. Remainder of property would be minimally maintained.</p>

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
			<p>Development Concept 3B: Concept 3B does not include the Cargo Terminal, Intermodal Rail Yard and Industrial Park at the south end of the base. Concept 3B will result in less land use impacts off-base since the road/rail access across shipyard creek to I-26 and the CSX Mainline is not included. Wetland loss would be a maximum of 3 to 4 acres. Concept 3B avoids SWMU 9 and SWMU 14 and avoids internal land use inconsistencies associated with the Cargo Terminal. Community/human service providers, the State Department, and NOAA would be allowed to remain in their current locations. Mitigation measures would be similar to Concepts 3 and 3A.</p>	
Terrestrial and Aquatic Vegetation and Wildlife	<p>This scenario would not adversely affect existing vegetation, wildlife, or threatened and endangered species. Impacts to vegetation and wildlife would be positive as potential removal of structures may allow the reversion of disturbed areas to natural vegetation and an increase in wildlife population. Also, the location of wading bird colonies would not be impacted, and with a reduction in activity near the colonies, the area should become more attractive as a colony location. Impacts to Least Tern nesting habitat would only result if the Enlisted Club or Warehouse 224 would be demolished. This plan does not entail demolition of these structures. Mitigation measure involve developing a new habitat for the Least Tern and avoiding or protecting wetlands during site modifications and developments.</p>	<p>This scenario would not adversely affect existing vegetation, wildlife, or threatened and endangered species. Impacts to vegetation, wildlife, and wading birds are potentially positive as described in Alternative Reuse Scenario 1. Landscaping improvements will increase the amount of green space, providing an aesthetic improvement. Impacts to Least Tern nesting habitat would only result if the Enlisted Club or Warehouse 224 would be demolished. This plan does not entail demolition of these structures. Mitigation measures are as identified for Alternative Reuse Scenario 1.</p>	<p>Development Concept 3: This concept would result in negligible impact to vegetation in the housing area in the northern portion of the property, but redevelopment of the Cargo Terminal, Intermodal Rail Yard, and industrial park would significantly affect existing vegetation resources in the recreational areas, dredge disposal area, and undeveloped woodlands of the property. Proposed landscaping would increase the "greenspace" at the Base, but this would consist of relatively low value habitat. Tidal marshes and mudflats along Shipyard Creek and Noisette Creek would not be affected. Wildlife species diversity in the southern part of the Base would become more representative of urban areas. Demolition of the Enlisted Club and Warehouse 224 would result in the loss of known Least Tern nesting habitat. Demolition of these structures could not be done during nesting periods of April through October. Impacts to aquatic species from the proposed Cargo Terminal will depend on whether the facility is pile-supported or constructed via bulkhead and backfilling. Backfilling would preclude any aquatic species from inhabiting the area, while pile supports would allow some habitat to remain (although this would be of minimal value due to sedimentation). Specific impacts will be addressed by USACE and OCRM at such time as the design of the facility is known and permission to construct is applied for. Mitigation measures for this concept would involve final engineering designs that may potentially avoid wetlands and wading bird colonies, and developing new habitats for the avian species and least tern.</p>	<p>This scenario would not adversely affect existing vegetation, wildlife or threatened and endangered species. Terrestrial and aquatic resources would benefit due to minimal human intrusion and redevelopment activities, particularly in the southern portion of the property.</p>

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
			<p>Development Concept 3A: Impacts to existing vegetation in the northern portion of the Base would be the same as for the Concept 3. However, this plan results in fewer acres of vegetation being removed in the southern portion of the Base, particularly wetland vegetation and upland areas along Shipyard Creek (see Table 4-3). Since the more developed areas of the Base would be affected by this concept; a greater amount of landscaped vegetation and maintained lawns would be impacted, but this would not represent a significant loss. Concept 3A would result in less impacts to wildlife resources in the southern portion of the Base due to the retention of much of the existing vegetation and habitat along Shipyard Creek and in wetlands. Effects on threatened or endangered species (i.e., Least Tern) would be similar to that for Concept 3.</p> <p>Development Concept 3B: Impacts to existing vegetation at the Base would be minimal since redevelopment focuses on areas which are currently developed. The southern portion of the Base would be relatively unaffected by Concept 3B, with the exception of locating new structures on the existing dredge disposal area. None of the wooded areas at the southern portion of the Base would be affected. Little impact on wildlife resources would result from Concept 3B, and neither the active Least Tern colonies nor the inactive wading bird colonies would be affected. No impacts would occur in Shipyard Creek since no crossing is proposed and the buffer area is retained.</p>	

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
Wetlands and Floodplains	This scenario would not impact wetland or floodplain resources at the property. Potentially positive impacts may result since existing buildings will be utilized potentially preceding the disturbance of wetlands due to construction activities. Positive impacts to the floodplains could result with the removal of impervious surfaces.	This scenario would not impact wetland or floodplain resources at the property. While passive recreational uses are proposed along Shipyard Creek, these uses (i.e., trails) can be undertaken while not impacting wetlands. Impacts to wetland resources and the existing floodplain may be positive as described in Alternative Reuse Scenario 1.	Development Concept 3: This concept would impact approximately 20.5 acres of freshwater wetlands primarily inland of Shipyard Creek. This impact would be permanent, but can be compensated through wetland creation, replacement or enhancement. Prior to development activities in or near wetlands, appropriate permits will need to be acquired from USACE and SCDHEC. This plan calls for significant new construction within the 100 year floodplain. Although hydrologic modeling will be required to determine the effect of this construction on flood elevations, increasing the elevation of the Cargo Terminal to approximately 12 feet above MSL would alter the flood retention ability of the property, and as a result, may alter the 1-, 5-, and 10-year flood elevations. Impacts can be mitigated by reducing the amount of area filled and/or installing detention or retention basins designed pursuant to the South Carolina Storm water Management Act and OCRM approval. Wetland mitigation options for Concepts 3 and 3A include protection, restoration, enhancement/bufferings, or creation, or a combination thereof. A wetland mitigation plan would also be required by OCRM. Floodplain mitigation would involve storm water management and floodplain (zone) construction standards.	The No-Action alternative would not affect wetland and floodplain resources on the property.

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
			<p>Development Concept 3A: Implementation of this concept would significantly reduce the loss of wetland areas due to redevelopment of the Base as compared to Concept 3. Only about 9.3 acres of wetlands would be lost. Tidal marshes and mudflats of Shipyard Creek would not be affected by this concept. Specific impacts from the construction and operation of the proposed road/rail access across Shipyard Creek would be addressed by SCDHEC, OCRM, and USACE during the permit review and approval process. As with the Concept 3, Concept 3A may affect the flood retention ability of the Base due to filling activities to increase the elevation of the Cargo Terminal to 10 to 12 feet above MSL. Similarly, Concept 3A would also require approximately 60 acre-feet of storage volume to accommodate the first inch of storm water runoff from the 10-year event and approximately 36 acre-feet of storage volume to accommodate the 2-year event. A portion of the Cargo Terminal would be within Flood Zone V7, however, adherence to CFR 44 60.3 would minimize any impacts.</p> <p>Development Concept 3B. This alternative could impact approximately 3 to 4 acres of wetlands on site. However, the majority of wetlands potentially impacted are within extensively developed areas and likely would not be developed further. The remainder of these wetland areas, including those along Shipyard Creek, would be preserved for open space, recreation, or storm water management. Concept 3B would require approximately 50-acre-feet and 30-acre-feet storm water retention for the 10 year event and 2 year event, respectively.</p> <p>As with Concepts 3 and 3A, all new construction under Concept 3B in the northern and southern portions of the Base will occur within the 100-year floodplain. However, because the southern part of the Base will not be filled for development of the Cargo Terminal (as in Concepts 3 and 3A), no impact to floodplain elevations would result.</p>	

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
Water Quality and Hydrology	<p>This scenario would not adversely affect water quality or hydrologic resources. A positive water quality impact may result with the cessation of Navy activities as unknown discharges into the Cooper River may be eliminated and since refueling activities would be discontinued. Remediation of contaminated sites during the RFI process will result in improvements to groundwater quality.</p>	<p>This scenario would not adversely affect water quality or hydrologic resources. Potentially positive impacts to water quality and groundwater quality are described in Alternative Reuse Scenario 1. Mitigation measures involve controlling storm water runoff during soil disturbance activities and through the development of a comprehensive and integrated drainage and open space program.</p>	<p>Development Concept 3: This concept would result in significant short-term and minor long-term impacts to the Cooper River due to the construction of the Marine Cargo Terminal which would extend into the Cooper River approximately 82 acres. The engineering and regulatory constraints to constructing this facility via a bulkhead and fill would likely result in this facility being constructed on pilings. Construction of the Cargo Terminal would require USACE Section 10 and Section 404 permits with appropriate mitigation for any loss of wetlands or river bottom. Construction of the terminal would result in significant turbidity and sedimentation impacts on water quality in the project vicinity for the duration of construction. Depending on its design, the terminal would alter the flow characteristics of the Cooper River and could cause nearshore sedimentation similar to or somewhat greater than that of the existing naval piers. However, the dredging requirements probably would be less than current requirements because dredging would not be required underneath the terminal, although hydrologic modeling will be required to assess the specific effect of the terminal once engineering designs are prepared. Operation of the terminal would have beneficial long-term effects on water quality of the Charleston estuary because of the cessation of fueling operations and ship maintenance currently conducted at the naval piers. Although construction of the rail/highway access from I-26 to the Marine Cargo Terminal and intermodal rail yard would result in impacts to the water quality and hydrology of Shipyard Creek, these impacts would be short-term and would last for the duration of construction only. Minor, long-term impacts to water quality in Shipyard Creek could occur due mainly to grease and oil inputs from trains and trucks using the railway and highway bridges over Shipyard Creek. Planned improvements to the wastewater system would eliminate the potential for industrial discharges into the Cooper River and could result in slight water quality improvement. Potential impacts due to refueling activities would be avoided since no refueling of ships would occur at the Cargo Terminal. This would not affect groundwater quality, although the potential would exist for accidental industrial spills. Also, groundwater quality should improve as a result of remediation of contamination sites.</p>	<p>This scenario would not adversely affect water quality or hydrologic resources. Potentially positive impacts to surface and groundwater results would result with the cessation of unknown discharges into the Cooper River, the termination of refueling activities, and the remediation of contaminated sites.</p>

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
			<p>Development Concept 3A: Impacts of Concept 3A to water quality and the Cooper River hydrology would be similar to Concept 3 except that the proposed Cargo Terminal would be constructed 132 acres into the Cooper River. This is an 50 acre increase from Concept 3. By moving the berthing edge of the Cargo Terminal closer to the maintained channel, a reduction in dredging activities may be realized. Mitigation measures for Concepts 3 and 3A include piling for the Cargo Terminal, rather than bulkhead and fill; 60 acre-feet storm water retention; and adherence to the conditions of CFR 44 Section 64.3. Additional mitigation measures may be imposed during USACE, SCDHEC, and OCRM permitting.</p> <p>Development Concept 3B: Implementation of Concept 3B would have minimal impact to local water quality and hydrology, primarily because no road/rail crossing is included over Shipyard Creek and there would be no construction in, or filling of, portions of the Cooper River. However, temporary sedimentation impacts will result from the removal of several piers in the Cooper River.</p>	
Topography, Geology and Soils	This scenario would not result in significant impacts to existing soils, geology or existing site topography. The possible removal of structures may result in short-term soil disturbance and possible soil erosion. Mitigation measures involve soil erosion and sediment control plans.	This scenario would not result in significant impacts to existing soils, geology, or topography. Impacts to soils and mitigation measures are as described in Alternative Reuse Scenario 1.	<p>Development Concept 3: This concept would not result in significant impacts to soils, or geology. The topography of portions of the southern end of the Base (i.e., Cargo Terminal, Intermodal Rail Yard) would be raised to approximately 12 feet above MSL to facilitate movement of goods from ship to rail. This area currently ranges from 0 to 10 feet above MSL. This filling activity would result in significant grade differences between the Cargo Terminal and the State Department facilities. However the southern end of the property has been used for dredge disposal for many years and surficial materials in this area are loosely consolidated clays poorly suited for load support. Some structures would likely require support on pile foundations. Due to the flat topography of the property, erosion and sedimentation are not a significant concern, but the potential for soil erosion exists where soils have been exposed, deposited as fill, or disturbed. In the short-term, man-made barriers for erosion and sedimentation control may mitigate erosion problems due to construction activities. Long-term mitigation measures will involve landscaping and natural vegetation coverage.</p>	The No-Action alternative would not affect soils, geology, or site topography.

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
			<p>Development Concept 3A: Implementation of Concept 3A would result in similar impacts as discussed for Concept 3. Mitigation measures for 3A include development of soil erosion and sediment control plans which includes acceptable post-development storm water runoff rates and the surcharging of unconsolidated soils.</p> <p>Development Concept 3B: Since neither the Cargo Terminal nor the Marine Industrial Park is proposed in this development plan, impacts to topography, geology, and soils would be negligible. Development in the northern portion of the property would create impacts similar to that of Concept 3B. Since filling activities on the land adjacent to the Cooper River are not proposed in 3B and it avoids development on loosely consolidated soils in the southern portion of the property, there would be no need for the mitigation measures (driving pilings, surcharging) which were required in Concept 3. Other impacts related to lands which would be graded for construction or demolition, or site-specific storm water runoff would require mitigation measures similar to Concept 3.</p>	
Climate and Air Quality	<p>Air emissions (including stationary and mobile sources) would be significantly reduced as a result of this alternative. NOx would be reduced from 390 tpy to 171 tpy. SO2 would be reduced from 294 tpy to 155 tpy. CO would be reduced from 2,263 tpy to 979 tpy. PM would be reduced from 112 tpy to 9.7 tpy. VOC would be reduced from 390 tpy to 111 tpy. Mitigation measures are as described in Alternative Reuse Scenario 3.</p>	<p>Air emissions (including stationary and mobile sources) would be reduced as a result of this alternative. NOx would be reduced from 390 tpy to 197 tpy. SO2 would be reduced from 294 tpy to 180 tpy. CO would be reduced from 2,275 tpy to 1,117 tpy. PM would be reduced from 114 tpy to 14 tpy. VOC would be reduced from 39 tpy to 125 tpy. Mitigation measures are as described in Alternative Reuse Scenario 3.</p>	<p>Development Concept 3: This concept would be similar to current conditions, however air emissions from mobile sources would be higher than current conditions primarily due to the significant increase in rail traffic associated with the reuse plan. NOx emissions would increase from 390 tpy to 825 tpy reflecting a dramatic increase in rail activity at the Base. SO2 emissions would decrease from 294 tpy to 56.3 tpy. CO emissions would decrease from 2,275 tpy to 2,220 tpy. PM emissions would decrease from 114 tpy to 13.7 tpy. VOC emissions would decrease from 39 tpy to 330 tpy. Although Concept 3 would result in a net increase in mobile sources emissions, it should be noted that existing mobile emissions from Naval ships are not included in the calculations so that the actual increase would be less than that projected. Cumulative impacts will be generally positive since air emissions would be decreased except for NOx. While NOx emissions will increase at the Base, they will be offset, cumulatively, by the closure of the CSX rail yard in North Charleston.</p>	<p>The No-Action Alternative would result in a significant reduction of both mobile and stationary air emissions sources. NOx emissions would be reduced from 390 tpy to 43 tpy. CO emissions would be reduced from 2,275 tpy to 15 tpy. SO2 emissions would be reduced from 294 tpy to 139 tpy. PM emissions would be reduced from 114 tpy to 5.4 tpy. VOC emissions would be reduced from 39 tpy to 0.8 tpy.</p>

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
			<p>Development Concept 3A: Concept 3A includes similar functional elements as does the Concept 3 and would generate similar levels of employment, vehicular traffic, rail traffic, and shipping traffic. As such, it is assumed that stationary and mobile air emissions (i.e., NOx, SO₂, CO, PM, and VOC) would be similar to those calculated for Concept 3. Cumulative impacts and mitigation measures would be similar as well.</p> <p>Development Concept 3B: Air emissions (including stationary and mobile sources) would likely increase due to the expansion of the shipyard and its support industries (including mobile and stationary sources). NOx would change from 390 tpy (existing conditions) to a range of 357 tpy to 1,068 tpy. SO₂ would change from 294 tpy to a range of 261 tpy to 1,804 tpy. CO would change from 2,275 to a range of 1,982 tpy to 2,897 tpy. PM would change from 114 tpy to a range of 77 tpy to 196 tpy. VOC would significantly increase from 39 tpy to a range of 241 tpy to 635 tpy. Ranges of emissions are provided due to the uncertainty of the extent of shipyard activity at the Base, and are intended to provide a realistic minimum and maximum emissions based on other existing shipyard facilities in the U.S. Mitigation measures would be similar to those described in Concept 3.</p>	
Noise	This scenario would result in minimal impacts to ambient noise levels which will not be noticeable at nearby noise sensitive receptors. Noise levels would not exceed a DNL of 65dB(a). Mitigation measures are as described in Alternative Reuse Scenario 3.	This scenario would not result in any obtrusive noise sources in the vicinity of the property. Noise sources associated with this scenario would primarily involve vehicular traffic. Noise levels would not exceed a DNL of 65dB(a). Mitigation measures are as described in Alternative Reuse Scenario 3.	<p>Development Concept 3: This concept would impact the ambient sound levels in the surrounding area as a result of operation of proposed marine cargo terminal, the intermodal rail yard, and the marine industrial park. In particular, noise levels would be generated by loading and unloading of the ships, trains and trucks near the piers. Construction and operation of the interchange from I-26 and the CSX lines through the residential areas to the cargo terminal would also result in noise levels noticeable in the residential communities to be traversed. Demolition and new construction activities would also generate short-term noise levels, but these would not be significant in nearby residential areas. In general, noise levels at the property line are not expected to result in a significant long-term problem. However, without detailed knowledge of the noise sources associated with the reuse or actual sound level measurements, it is not possible to know for certain. Cumulatively, operation of the shipyard, cargo terminal, and unrelated industrial operations in the vicinity of the Base may result in increased ambient noise levels.</p>	The No-Action Alternative would result in no noise-related impacts.

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
			<p>Development Concept 3A: This would generate similar noise levels as would Concept 3. However, since the Intermodal Rail Yard would be located approximately 500 feet farther from nearby residential areas, noise impacts from this areas on off-Base areas would be less. Noise impacts resulting from the new road/rail access from the CSX lines and I-26 to the southern part of the Base would be the same as Concept 3. Mitigation measures involve ensuring that demolition and construction activities occur during daylight hours, adherence to noise regulations or ordinances as imposed by the City of North Charleston, and constructing various types of noise barriers.</p> <p>Development Concept 3B: No significant noise impacts would result from Concept 3B. Noise resulting from shipyard development would be similar to existing conditions. Short-term impacts would be expected from construction and demolition activities. Long-term impacts would be associated with increased vehicular, especially truck, traffic generated from this alternative. Since the road/rail access is not included in Concept 3B, noise impacts to areas in the vicinity of this proposed features would not be realized.</p>	

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
Transportation	<p>No changes to the existing roadway are proposed in this scenario, however traffic flow patterns would improve due to the slight reduction in traffic volume. Projected average daily traffic for a weekday will be 62,583 trips, increased 6% from 58,550 trips in 1990. 8% of the AVT would be truck traffic. No changes or impacts to marine, rail, and air facilities are anticipated. Overall, no adverse transportation impacts would be associated with this scenario.</p>	<p>This scenario proposes changes to the existing realignment of the McMillan Avenue and Cosgrove Avenue into a promenade to provide improved access to the property. Projected average daily vehicle trips for a weekday would be 74,280 a 21% increase from 58,550 trips in 1990. 5% of the projected AVT will be truck traffic. Marine and air facilities will not be impacted. The railway network will be upgraded, and bus service may be expanded throughout the Base. Overall, no adverse transportation impacts would be associated with this scenario. A potentially positive impact may result as ingress/egress to the site is more evenly distributed between McMillan and Cosgrove Avenues. Mitigation includes upgrading existing rail lines, improved roadways, and pedestrian/bike access, and implementation of transportation demand management techniques.</p>	<p>Development Concept 3: This concept proposes significant improvements and realignments of the existing roadways at and near the property. On the former Base, the plan proposes removal/realignment of streets servicing the southern part of the property (i.e., the cargo terminal), realignment of McMillan and Cosgrove Avenues, realignment of Virginia Avenue, and new road construction in the vicinity of the office complex. Also included is a new highway interchange with I-26 and new rail access to the CSX line to access the cargo terminal/intermodal rail yard from across Shipyard Creek. The final alignment will need to be closely coordinated between the Redevelopment Authority, SCDOT, city of North Charleston, SCDHEC, USEPA, and the local community. Average Daily Traffic for a weekday would be 67,259 trips, a 13% increase from 58,550 trips in 1990. 12% of the projected ADT will be truck traffic. The plan also provides for other improvements in the local rail system including abandoning the CSX intermodal yard in North Charleston to be replaced by the proposed intermodal yard on the property, as well as removal of existing CSX line along the east side of Spruill Avenue. Use of this line by trains servicing the proposed rail yards would result in disruption to traffic flow and queuing due to at grade crossings along this portion of the line. Mitigation include new rail and road access to the site, avoiding contaminated areas, evaluation, alternative types of bridges, and implementation of transportation demand management techniques.</p> <p>Development Concept 3A: Traffic generation (including vehicular, marine, rail, and mass transit) associated with Concept 3A would be similar to those discussed Concept 3. Improvements to the road network would also be similar, except for minor modifications to the internal road and rail alignments due to the relocation of the Intermodal Rail Yard approximately 500 feet to the east. Mitigation includes new rail and road access to the site, avoiding contaminated areas, evaluation, alternative types of bridges, and implementation of transportation demand management techniques.</p> <p>Development Concept 3B: The existing on-base roadway network is proposed to remain substantially unchanged in Concept 3B. However, access by tractor trailer traffic to service the shipyard and industrial activities on base will require upgrading of on-base roadways to improve circulation and safety.</p>	<p>No changes to the existing roadway system are proposed. With no redevelopment of the Base, only NOAA, the State Department and minimal site maintenance activities will generate traffic. No adverse transportation impacts would be associated with this scenario.</p>

Table 2-7 COMPARISON OF ENVIRONMENTAL IMPACTS				
Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
			<p>The average daily traffic (ADT) for a weekday would be 60,102 vehicle trips, representing a 3% increase in traffic volume from the 58,550 average daily vehicle trips in 1990. Based on the assumption that 12% of the ADT would be truck traffic, 7,212 truck trips are projected. ADT for a weekend would be 16,774 vehicle trips, 1,010 of which would be truck traffic (assumed to be 6% of weekend ADT). Weekday afternoon peak hour volumes would equal 7,428 vehicles, while 1,404 weekend peak hour trips are projected.</p> <p>No changes to the existing railway network are proposed in this reuse plan. Rail activities would be maintained to provide service to the shipyard and maritime industrial activities.</p>	

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
Socioeconomics	<p>Maximum employment generated/retained by this scenario ranges from 1,900 to 9,887 primarily in office/training, industrial, commercial/retail, and shipyard sectors. Over the 20 year implementation of the plan, cumulative revenues to the city of North Charleston would be \$415,000 however cumulative costs to the city over the same time period will be about \$6.8 million. The scenario calls for use of 300,000 sf of housing in 35 acres to be used by McKinney Act providers.</p>	<p>Maximum employment generated/retained by this scenario ranges from 2,000 to 11,352 primarily in the office/training, industrial, shipyard, and mixed use/civic sectors. Over the 20 year implementation of the plan, cumulative revenues to the city of North Charleston would be \$650,000 however cumulative costs to the city over the same time period would be about \$5.8 million. The scenario calls for use of 200,000 sf of housing and 80,600 sf of community services space for McKinney Act providers.</p>	<p>Development Concept 3: Implementation of this concept would cost \$967 million over 20 years, including \$600 million for the new industrial park and \$60 million for area-wide improvements. Total decrease in employment due to closure of the Base is about 20,842 including 15,202 military and 5,640 civilian. This concept would create/retain approximately 9,800 direct jobs on Base and approximately 2,700 indirect jobs, resulting in a net loss of about 8,300 jobs from current conditions. In addition, about 25,000 temporary construction jobs would be generated as a result of the \$967 million in capital expenditures to implement the plan as proposed. Total regional population is expected to decrease slightly due to Base closure with the most significant loss being in the North Charleston/Hanahan area. Approximately 1,300 federal jobs will be located at the property in the short term due to the location of DFAS and NOAA into excess structures. Final alignment of the proposed roadway access to I-26, could affect an existing off-base mobile home park.</p> <p>Development Concept 3A: The beneficial and adverse effects of 3A on population, employment and income, taxes and revenue, economic development, and housing would be similar to those discussed for Concept 3. In general, these effects would be positive and would partially negate the economic impacts of Base closure.</p> <p>Development Concept 3B: Maximum direct employment for this concept would be approximately 12,344 jobs, primarily in maritime industrial/shipyard and office/training activities. Implementation of the plan would cost \$209 million, approximately \$58 million in area-wide improvements, \$137 million in district-level improvements and \$17 million in optional recreation improvements. This would generate between \$311,245 to \$392,600 in tax revenues annually. Jobs associated with DFAS, the State Department, NOAA, and NCCC would remain unaffected by Concept 3B. No off-base areas would be affected by the road/rail access since it is not included in Concept 3B.</p>	<p>The No-Action alternative would result in no beneficial economic impacts to the local economy since the land and facilities would not be redeveloped and no employment would be generated or retained. No revenues would be collected by the City of North Charleston, however, since the land would be retained by the federal government the city would incur no costs for site maintenance or public safety.</p>

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
Infrastructure and Utilities	<p>Due to the drop in employment from existing conditions inherent in this alternative, this alternative would result in a significant reduction in demand for all utility systems. Availability and capacity of water, sewer and electrical systems would not be adversely affected. However, revenue generated by the local service providers (e.g., City of North Charleston) would decrease. Due to the minimal new construction proposed, no significant increase in storm water runoff is anticipated. As in the short-term storm water runoff, quality should improve with a decrease in the use of the Base. Overall, an increase in storm water runoff should be minimal as new construction is not planned. No mitigation measures are proposed. Steam service would be discontinued.</p>	<p>Due to the significant reduction in employment from existing conditions, this alternative would result in a significant reduction in demand for all utility systems. Availability and capacity of water, sewer and electrical systems would not be adversely affected by this alternative, however some on-site utility distribution systems may need to be replaced due to age and condition. Also, there will be lost revenues to service providers. This alternative would not result in a significant increase in storm water runoff, and the overall increase of storm water runoff should be minimal as a drainage and storm water detention system is proposed. Mitigation measures involve the designation of storm water retention areas. Steam service would be discontinued.</p>	<p>Development Concept 3: Due to the net reduction of approximately 8,300 direct jobs (or about 30% of current levels), utility demand is expected to drop by about 30% accordingly. Concept 3 would not affect the current 55 mgd surplus water capacity and 9 mgd surplus sewage treatment capacity within North Charleston. Steam generation would be discontinued with closure of the power plant. Sufficient electrical capacity exists to power conversions to electric heat systems. The internal electrical distribution system may require upgrading to accommodate the individual loads. The condition of the water and sewer distribution/collection mains would require that certain portions be replaced. Storm water runoff calculations indicate that this alternative would result in a 28% increase in runoff from the 2-year storm event, and a 23% increase in the 10-year storm event. About 60 acre-feet of storm water detention capacity would be needed to accommodate the 10-year event at the southern end of the Base. Mitigation measure involves the development of a storm water management plan.</p> <p>Development Concept 3A: The impacts of Concept 3A on existing infrastructure and utility systems at the Base, and the need for both short- and long-term improvements would be similar to those discussed for Concept 3. Storm water management and required storm water detention volumes would also apply to 3A. Mitigation measures involve the development of a storm water management plan.</p> <p>Development Concept 3B: Anticipated uses and employment projections for Concept 3B indicate that water consumption will be approximately 2.5 mgd. It is estimated 1.98 mgd of wastewater would be generated, a 38% reduction of current flow rates. Neither water use nor wastewater generation will exceed the capacity of existing North Charleston services. The electrical system is adequate to meet short-term needs, but would require improvements, specifically upgrading existing 7.4 kV distribution lines to 13.2 kV. Estimated runoff rates were projected to be 11% higher than predevelopment rates, lower than the 28% increase estimated in Concepts 3 and 3A. Development under Concept 3B would utilize existing mechanical systems such as the steam distribution system and compressed air distribution system; however, most utility distribution systems (i.e., water, wastewater) will need to be improved or replaced to meet the long-term use of the Base.</p>	<p>The No-Action alternative would not adversely affect the availability or capacity of existing water, wastewater, electricity, or heating systems. The existing overhead steam distribution system would remain in place. Long periods of minimal use and maintenance would result in adverse impacts to the condition of the infrastructure systems.</p>

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
Community Services and Facilities	<p>This alternative would result in a net student enrollment loss of 1,300 in Charleston County, 1,400 in Berkeley County, and 625 in Dorchester County with a corresponding loss of state aid of 1,300,000, 1,630,000, and \$783,500, respectively. This alternative would not result in adverse impacts to recreational facilities, medical or dental services. The city of North Charleston would need to establish at least one fire station on Base, but could use existing Station No. 1. Approximately 10 new police officers at a cost of about \$1,000,000, would be needed to retain the current level of security service throughout the city. This alternative provides the greatest potential for use by Community Service agencies and other users including NCCC.</p>	<p>This alternative would result in an approximate net student enrollment loss of 1,500 in Charleston County, 1,300 in Berkeley County, and 550 in Dorchester County with a corresponding loss of state EFA aid of \$1,400,000, \$1,500,000, and \$600,000, respectively. This alternative would not result in adverse impacts to recreational facilities, or medical and dental services. The city of North Charleston Fire Dept. would need to utilize existing Stations No. 1 and No. 2 to continue current levels of fire protection services. Approximately 10 to 14 new police officers at a cost of about \$1,925,000 would be needed to retain the current level of security services throughout the city. This alternative may restrict the reuse of existing structures by Community Service agencies and other users, including NCCC.</p>	<p>Development Concept 3: This concept would result in a maximum net student enrollment loss of 1,041 in Charleston County, 1,350 in Berkeley County, and 524 in Dorchester County with a corresponding loss of federal and state aid of \$970,800, \$1,751,000, and \$654,850, respectively. The transfer of Navy and civilian personnel from the Base to other navy jobs in the region would retain approximately 966 students, including 143 military students, in the Charleston area. No schools would be closed as a result of the proposed action. The child development facility on Base would continue to provide day care services to 147 children under the operation of the North Charleston Housing Authority. The availability of recreational facilities to the general public would be greatly enhanced since this alternative provides for 30% (420 acres) of the Base to be used for recreation and open space. The city of North Charleston would need to utilize the one existing fire station on Base and hire 10-14 additional firefighters at an annual cost of \$1,200,000. The availability of medical and dental care to military personnel in the area will not be affected. Charleston will need to hire about 10 new police officers at a cost of \$1,000,000 Concept 3 provides for the use of housing, training, office space, and community support facilities by McKinney Act providers and NCCC.</p> <p>Development Concept 3: Concept 3A would result in similar beneficial and adverse impacts to the provision of community services including schools, day care/child development, recreational facilities, emergency and security services as would the Concept 3. In addition, local community service organizations would also benefit via the McKinney Act process. Mitigation measures include the no cost transfer of lands for public parks and the provision of grants for park operation and maintenance; provision of facilities for community services, training, and housing as provided for by the McKinney Act and NCCC; the transfer of Navy-owned security and firefighting facilities and equipment, plus a federal grant of \$900,000 for security people.</p> <p>Development Concept 3B: Assuming full build out of Plan 3B as proposed, this alternative would result in an approximate net enrollment decrease of 543 in Charleston County, 1,182 in Berkeley County and 341 in Dorchester County. Loss in state aid would be \$506,619 in Charleston County, \$1,533,054 in Berkeley</p>	<p>The No-Action Alternative would not result in significant adverse impacts to existing community services including schools, recreational facilities, day care facilities. Emergency services would continue to be provided by the Navy but at greatly reduced levels which could result in reduced response time to fires or other security emergencies. Local community service agencies providers in the Trident region would not benefit from this alternative, and would be indirectly affected due to the lack of productive use of facilities at the Base.</p>

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
			similar to Concept 3. This plan makes available the 395,000 square feet of space for community service providers as does Concepts 3 and 3A; however, an additional 183,060 square feet would be available in the southern portion of the base since the Maritime Cargo Terminal and Marine Industrial Park are not included in Concept 3B. Impacts to local police and fire protection services would be similar to Concepts 3 and 3A.	
Cultural Resources	This alternative would not affect any area of archaeological sensitivity, however any future ground disturbance in the vicinity of site 38CH1496 in the officers housing area may result in some adverse impacts. The future use and maintenance of any of the 116 structures which are potentially NRHP-eligible will be guided by the terms and conditions of an MOA to be developed between the Navy and the South Carolina Department of Archives and History.	This alternative would not affect any area of archaeological sensitivity; however, any future ground disturbance in the vicinity of site 38CH1496 in the officers housing area may result in some adverse impacts. The future use and maintenance of any of the 116 structures which are potentially NRHP-eligible will be guided by the terms and conditions of an MOA to be developed between the Navy and the South Carolina Department of Archives and History.	<p>Development Concept 3: This concept would not affect any area of archaeological sensitivity, however any future ground disturbance in the vicinity of site 38CH1496 in the officers housing area may result in some adverse impacts. The future use and maintenance of any of the 116 structures which are potentially NRHP-eligible would be guided by the terms and conditions of an MOA to be developed between the Navy and the South Carolina Department of Archives and History.</p> <p>Development Concept 3A: Concept 3A would result in similar impacts to cultural resources as discussed for Concept 3 above.</p> <p>Development Concept 3B: Concept 3B would result in similar impacts to cultural resources as discussed for Concept 3 above.</p>	This alternative would not affect archeological resources at the Base. The future use and maintenance of any of the 116 structures which are potentially NRHP-eligible will be guided by the terms and conditions of an MOA to be developed between the Navy and the South Carolina Department of Archives and History.

Table 2-7

COMPARISON OF ENVIRONMENTAL IMPACTS

Resource	Alternative Reuse Scenario 1	Alternative Reuse Scenario 2	Alternative Reuse Scenario 3:	No Action Alternative
Environmental Contamination	<p>This scenario would not be significantly affected by on-site contamination. The Navy's RFA/RFI program would be allowed to proceed unhindered by this alternative. All environmental concerns, such as UST/AST, friable ACM, PCBs, ordnance and pesticide will be remediated per applicable federal and state regulations and DoD policies in place at the time of transfer. Mitigation measures by the Navy include remediation of all known hazardous waste sites pursuant to applicable state and federal regulations and agreements.</p>	<p>This scenario is similar to Alternative Reuse Scenario 1 in the northern part of the Base, but leaves the southern portion of the property essentially undisturbed, and will require substantial improvements to roads, railways, buildings and utilities. The southern portion of the property would not be developed into a cargo terminal under this scenario, but the area would be used for a mix of waterfront commercial/ industrial, recreational, and open space. The SWMUs and AOCs (old dump, chemical disposal area) would not affect the implementation of this plan. Mitigation measures by the Navy include remediation of all known hazardous waste sites pursuant to applicable state and federal regulations and agreements.</p>	<p>Development Concept 3: Development of the marine cargo terminal would potentially be affected by SWMU 7, however remediation of this area will occur prior to property transfer. AOC 690, the dredge material disposal area, may also affect development, however confirmatory sampling has not yet been completed to determine existence of contamination. Given the industrial nature of the adjacent areas, it is possible that the proposed rail/road corridor would traverse a regulated waste site or area of unknown contamination. The most significant impediment to implementation of the maritime industrial park and intermodal rail yard as proposed is the presence of SWMU 9 (closed landfill), SWMU 14 (chemical disposal area) and AOC 503 (unexploded ordnance). Although these areas will be remediated prior to transfer, it is likely that the method of closure (RCRA cap and long-term monitoring) will preclude transfer of this area. AOCs will be remediated per applicable federal and state regulations. As detailed information on these sites becomes available from the Navy, USEPA, and SCDHEC, the design and layout of these facilities may need to be modified. All contaminated areas such as UST/ASTs, friable ACM, PCBs, ordnance, and pesticide areas would be remediated per applicable federal and state regulations and DoD policies in place at the time of transfer. Mitigation measures by the Navy include remediation of all known hazardous waste sites pursuant to applicable state and federal regulations and agreements.</p> <p>Development Concept 3A: This concept would avoid SWMU 9, SWMU 14, and AOC 503. All contaminated areas such as USTs/ASTs, friable ACM, PCBs, ordnance, and pesticide areas would be remediated per applicable federal and state regulations and DoD policies.</p> <p>Development Concept 3B: This concept avoids construction in contaminated areas (SWMUs 9 and 14). This avoidance of contaminated areas at the southern end of the Base would allow implementation of development in a more timely and cost-effective manner than the Concept 3. As with Concepts 3 and 3A, all contaminated areas at the Base would be remediated per applicable federal and state regulations and DoD policies.</p>	<p>The No action alternative would not affect or be affected by site contamination. All SWMUs and AOCs will be remediated per applicable federal and state regulations and DoD policies. Mitigation measures by the Navy include remediation of all known hazardous waste sites pursuant to applicable state and federal regulations and agreements.</p>

Concept 3 would result in the greatest relative environmental impacts. Due to the existing predisturbed nature of the site, identified mitigation measures, and the flexibility to implement either of the development concepts which are included as Alternative Reuse Scenario 3, these environmental impacts can be reduced. Detailed engineering and design studies will be needed to adequately quantify impacts of specific developments and ensure that environmental impacts are mitigated to acceptable levels. These studies will need to be prepared by the Redevelopment Authority or other entity responsible for redevelopment at such time as specific development proposals are finalized and submitted to appropriate state and federal agencies for review and approval.

Table 2-8 provides a comparative matrix of key factors in selecting and implementing Alternative Reuse Scenario 3. These factors or criteria include the community reuse goals as stated in the Reuse Plan. Each alternative is rated as to whether it meets, partially meets, or does not meet stated criteria. As shown on this table, Alternative Reuse Scenario 3 meets the criteria of having been approved by Charleston County, Berkeley County, Dorchester County, the BEST Committee, and the Redevelopment Authority. Development Concept 3B has been endorsed by the City of North Charleston and the Redevelopment Authority.

2.6 Alternatives Eliminated From Further Consideration

As noted in Section 2.4 of this FEIS, the No Action Alternative is contrary to the intent of representatives of Congress, the Executive Office, and the DoD. As such, it has been eliminated from further consideration.

2.7 Selection of Preferred Alternative

BEST and the Redevelopment Authority identified Alternative Scenario 3 as the preferred alternative development scenario based on what was determined to be most appropriate, consistent with the communities goals and objectives, and most likely to succeed in creating the employment, taxes, and economic growth, and consistent with the primary goals of the plan. The Navy has also identified Alternative 3 as the preferred plan. As provided herein, three development concepts that could be implemented by the Redevelopment Authority based on the findings and conclusions of ongoing site investigation and the development objectives of the City of North Charleston as the host community.

However, for purposes of comparison, and in order to comply with the intent of NEPA, the impacts of each of the Alternative Reuse Scenarios, including Development Concepts 3, 3A and 3B, are identified and addressed in this FEIS. Consistent with the

Table 2-8
COMPARATIVE EVALUATION MATRIX: KEY FACTORS AND CRITERIA

02: UI5900/UI5_4522.PM5

	Minimize Impacts to Wildlife ³	Minimize Impacts to Cultural Resources ³	Enhance Public Use of Waterfront ³	Minimize Water Quality/Hydrology Impacts ³	Land Use Compatibility Internal and External ³	Minimize Land Use Impacts ³	Avoids Contaminated Areas ³	Avoids Wetland Areas ³	Consistent with BRAC Requirements ⁴	Local Commitment to Implement ²	Approved by BEST ²		Ensure Financial Stability of Local Governments and Service Providers ¹	Implementation Accountable to Policy Leadership of the Region ¹	Support Regional Community, Economic and Environmental Goals ¹	Consistent with Goals of N. Charleston ¹	Maximize Job Retention/Creation ¹
Scenario																	
Alternative Reuse Scenario 1:	●	●	○	●	●	●	●	●	●	○	○		○	●	○	○	●
Alternative Reuse Scenario 2:	●	●	○	●	●	●	●	●	●	○	○		○	●	○	○	●
Alternative Reuse Scenario 3: Development Concept 3	●	●	●	●	●	●	○	○	●	○	●		●	●	●	○	●
Development Concept 3A	●	●	●	●	●	●	●	●	●	○	○		●	●	●	○	●
Development Concept 3B	●	●	●	●	●	●	●	●	●	●	○		●	●	●	●	●
No Action Alternative	●	○		●	N/A	●	●	●	○	○	○		○	○	○	○	○
<div> ¹ Identified by BEST committee as a Community Reuse Goal ² Key programmatic criteria ³ Key environmental criteria ⁴ Base is closed and transferred to local community for redevelopment pursuant to an approved Reuse Plan, which is considered to be the preferred alternative consistent with the Pryor Amendment. </div> <div> ● Meets stated criteria ● Partially meets stated criteria ○ Does not meet stated criteria N/A Not applicable </div>																	

SOURCE: Ecology and Environment, Inc. 1994.

determination of the BEST committee and the Redevelopment Authority, Alternative Reuse Scenario 3 is considered the preferred alternative. However, it is noted that Concept 3A would result in less environmental impact than Concept 3, and Concept 3B would result in even less environmental impacts.

3

Description of the Existing Environment

3.1 Land Use and Aesthetics

3.1.1 Naval Base Land Use

The Charleston Naval Base is approximately 1,575 acres and includes about 614 buildings totaling 7,965,505 square feet. There is approximately 2.3 million square feet of industrial space, 1.8 million square feet of warehouse space, 2.2 million square feet of administrative space, 86 residences, 19 residential barracks, 152 marina slips, 23 piers, five dry dock facilities and a range of recreational facilities (BEST 1994). For land use discussion purposes, the Base is further subdivided into functional areas south, west, and north of the Naval Shipyard (see Figure 3-1).

Charleston Naval Shipyard

The Charleston Naval Shipyard is located on 121 acres west of the Cooper River. The shipyard is bounded by the Cooper River, 13th Street to the south, Hobson Avenue and River Road to the west, and recreational facilities and family housing near 1st Street to the north. The mission of the shipyard is to perform work in connection with construction, conversion, overhaul, repair, alteration, dry docking, and outfitting of ships and crafts. A significant portion of the Naval Shipyard is functionally classified as an industrial area. The industrial area is roughly equal to the strictly secure and intensely developed Controlled Industrial Area (CIA). The CIA runs the length of the shipyard along the Cooper River for a distance of approximately 5,600 feet (U.S. Department of the Navy 1989). Specific land uses within the CIA are operations, maintenance and utility, supply, and administration. The operations area includes five dry docks, six piers, and a variety of large buildings with high bays built for heavy manufacturing activities.

Charleston Naval Base

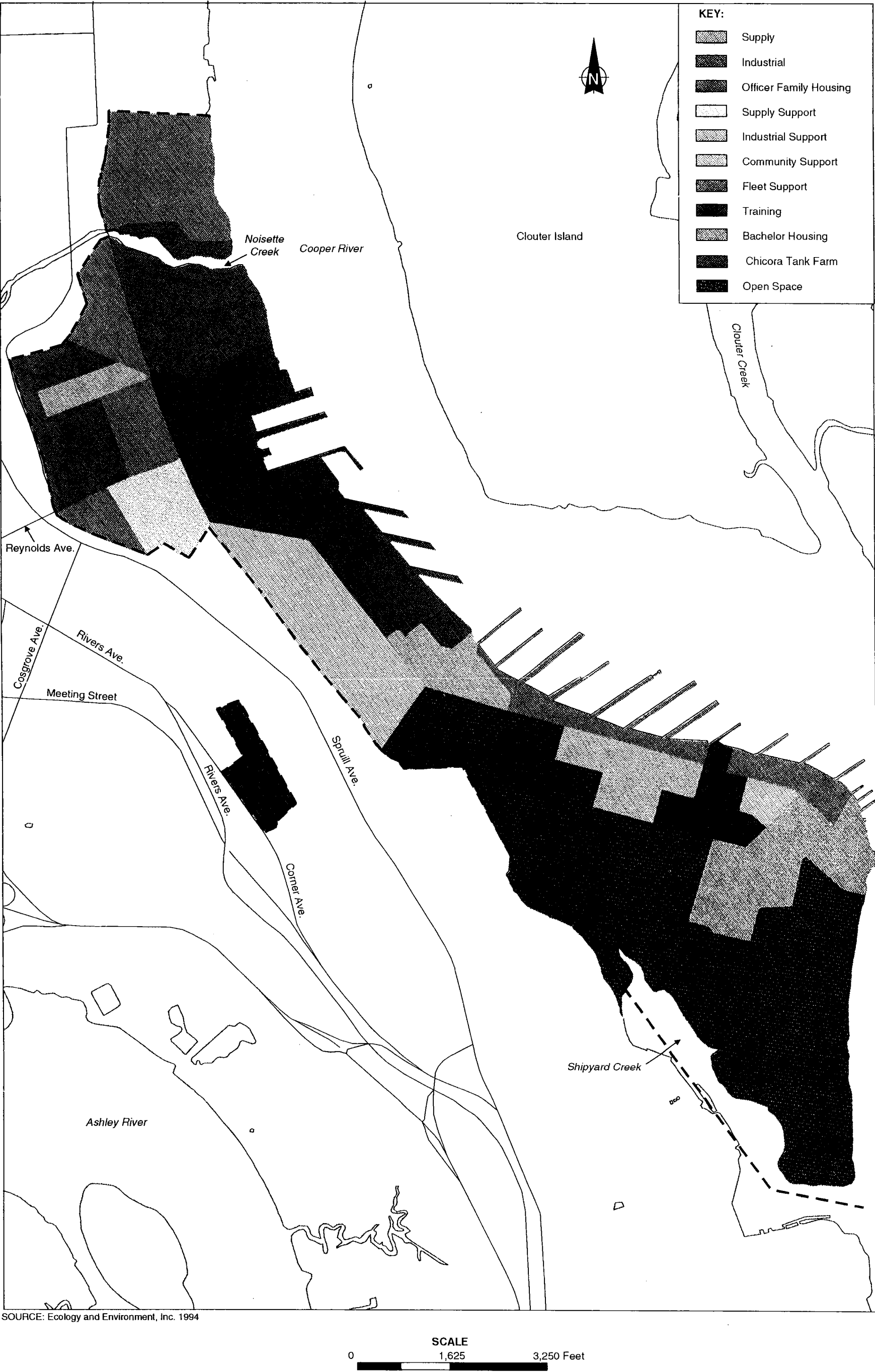
Base South. The southern portion of the Base is bounded to the north by Naval Base Road, to the east by the Cooper River, and to the west by Shipyard Creek. A significant portion of the area is open space. The open space area is dominated by a large dredge material area near the southern tip, ammunition storage area along Juneau Avenue, operations at the marina, and playing fields and an athletic track west of the intersection of Holland Street and Bainbridge Avenue.

The remainder of the southern portion is intensely developed into fleet support, community support, station support, training, and bachelor housing functions (U.S. Department of the Navy 1985). The intense development, in general, is east of Bainbridge Avenue with the exception of some community support and bachelor housing west of Bainbridge Avenue located around Holland, Strong, and Vesole Streets. Operational land uses occur along the waterfront, Hobson Avenue, with a primary function of providing fleet support. Station support function occur along Dyess and Bainbridge Avenues and include supply, hospital and medical, and community facility land uses (U.S. Department of the Navy 1985). The bachelor housing area, which is located in the southeast near Osprey Street, is surrounded by community facilities, administration, maintenance and production, and open-space land uses.

Base West. Community service facilities occupy a large part of the area west of the shipyard. The facilities are located west of Hobson Avenue and north of Naval Base Road and include recreation, administration, training, troop housing, and community facilities land uses (U.S. Department of the Navy 1989). A large portion of the area is occupied by playing fields and parking.

Significant additional activities occur around the intersection of McMillan Avenue and Avenue D. The activities are functionally classified as industrial, industrial support, and supply and include operations, maintenance and utility, supply, and administration land uses (U.S. Department of the Navy 1989).

Base North. The area north of the Naval Shipyard is considered completely developed into officer family housing, station support, and supply functional classification. Specific land uses include family housing, community facilities, administration, and supply land uses (U.S. Department of the Navy 1985). A predominate feature is the Fleet Industrial



SOURCE: Ecology and Environment, Inc. 1994

Figure 3-1 FUNCTIONAL AREAS WITHIN THE CHARLESTON NAVAL BASE

Supply Center located north of Noisette Creek between Second and Sixth streets north. There are approximately 25 buildings in the area mostly consisting of one-story linear warehouses. Supply land uses extend south along the western side of Avenue "D" across Turnbull Avenue and end at McMillan Avenue. The area just west of Avenue "D" and north of Turnbull is an industrial warehouse and supply district that includes storage for large bulk items and some hazardous flammable material. Most of the supply area between Turnbull and McMillan is characterized by a variety of building types of varying age.

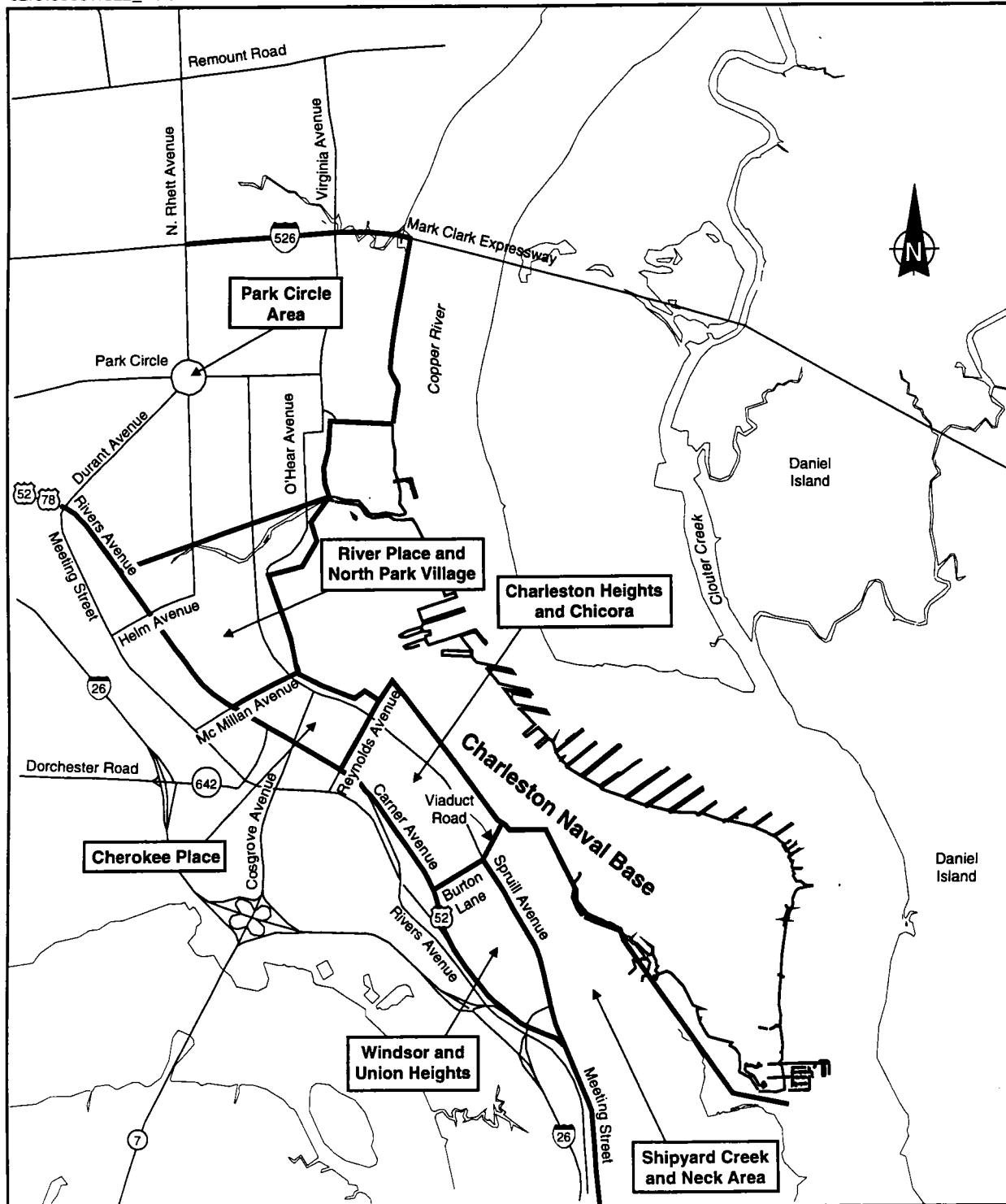
Other land uses north of the shipyard include family housing complexes located just southeast of the Turnbull Gate entrance and northeast of the intersection of Avenue "D" and Turnbull and an administration and housing area north of Turnbull and east of St. Johns Avenue. Two main features in the administration and housing area are the old naval hospital and a large day-care facility. The family housing southeast of Turnbull Gate is a mix of two-story duplexes with garages and ranch-style flats with carports. There are approximately 50 housing units located northeast of the intersection of Turnbull Avenue and Avenue "D." The units consist of a mix of single family and duplex units adjacent to the golf course.

3.1.2 Surrounding Land Uses

Land uses surrounding the Naval Base have been divided into six geographical areas: the Park Circle Neighborhood, the River Place and North Park Village Developments, the Cherokee Place Neighborhood, the Charleston Heights and Chicora Place Neighborhoods, the Windsor and Union Heights Neighborhoods, and the Shipyard Creek and Neck Area (Figure 3-2) (Bello 1994). Land uses include residential, general business, and light and heavy industrial. The City of North Charleston has control over land development for the majority of the area surrounding the Naval Base, whereas the City of Charleston controls development in the Neck Area located near the southern tip of the Base adjacent to Shipyard Creek. Charleston County controls land development in the Windsor and Union Heights Neighborhoods located approximately 0.5 mile east of Shipyard Creek.

Park Circle Neighborhood

The Park Circle Neighborhood is located northwest of the Base. For the purpose of land use discussions, the area begins north of the Base along the Copper River and extends south to Noisette Creek marshland. Park Circle is predominately single family residential with some multi-family and mobile home development. General business activity occurs at the intersection of Montague and Chateau avenues and extends east and west along Montague. The land use immediately north of the Base and east of Virginia Avenue is heavy industrial.



SOURCE: Ecology and Environment, Inc. 1994

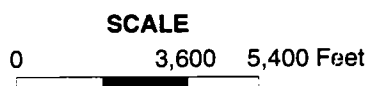


Figure 3-2 NEIGHBORHOODS SURROUNDING THE CHARLESTON NAVAL BASE

Specific activities in the area include a Texaco Lubricant plant and a Hess Oil tank farm. West of Virginia and north of Garco Street, approximately 0.5 mile from the Base are light and heavy industrial land uses. Transportation service to the industrial area is served by rail lines, roads, and the river. Roadway accessibility to the area has been greatly improved by the completion of the Mark Clark Expressway (Interstate 526).

River Place and North Park Village Developments

River Place and North Park Village, large multi-family residential developments, are the predominate land uses south of Noisette Creek marshland. The area is bounded by Rivers Avenue, St. Johns/O'Hear Avenue, and McMillan Avenue to the south. Land use along Rivers Avenue is strip development and includes a mix of service, retail, and wholesale activities. Commercial development along the north side McMillan Avenue includes a hotel, fast-food restaurant, and convenience gas store. Land use along Spruill Avenue and St. Johns (adjacent to the Base) is predominately single family, multi-family, and mobile home residential. There are, however, some nonresidential land uses such as St. Johns Catholic Church/School along St. Johns Avenue and Ronald McNair Elementary School along Spruill Avenue.

Cherokee Place Neighborhood

The Cherokee Neighborhood is south of McMillan Avenue and is generally bounded by Meeting Street, Spruill Avenue, and Reynolds Avenue to the south. A predominate feature in the area is the Charleston Naval Hospital located at the intersection of McMillan and Rivers Avenues. Commercial strip development occurs south of the hospital along Rivers Avenue and continues east and west along Reynolds Road. Spruill Avenue separates predominately residential land uses to the west of the Base. The central portion of the Cherokee neighborhood is residential, including single family, multi-family, and some mobile homes. Nonresidential encroachment such as auto service, office, and general business activities occurs along Rivers Avenue and Reynolds Road and, to a lesser extent, along Spruill Avenue.

Charleston Heights and Chicora Place Neighborhoods

The Charleston Heights and Chicora Neighborhoods are south of Reynolds and generally bounded by Meeting Street to the west, the Base to the east, and Clements Avenue to the south. A distinctive land use feature is the Chicora Tank Farm located at the intersection of Carner and Clements avenues. Adjacent to, and nearly surrounded by, the Tank Farm

is Toole Middle School. The land use pattern and intensity of development is similar to the Cherokee Place Neighborhood. Residential land uses occupy the central portion of the neighborhood and comprise single family, multi-family, and mobile homes. Commercial land uses dominate frontage along Rivers/Carner avenues with the exception of the tank farm and middle school. Areas east and west of Spruill Avenue are predominately residential with some minor retail commercial activities. Clements Avenue is predominately residential.

Windsor and Union Heights Neighborhoods

The Windsor and Union Heights Neighborhoods are generally bounded by Spruill Avenue, Meeting Street, Clements Avenue, and Burton Lane. Charleston County has regulatory control for the majority of the area, which is a mixture of residential uses with some general business and light industrial and manufacturing activities occurring along Spruill and Meeting.

Shipyard Creek and Neck Area

The Shipyard Creek and Neck Area is bounded by Naval Base Road (the southernmost entry to the base), Spruill Avenue, and Shipyard Creek, and extends south of the junction of Shipyard Creek and the Cooper River. Land use is heavy industrial and vacant areas. Existing development includes the Foster Wheeler Resources Recovery plant, Macalloy plant, Metal Trades Inc., the City of North Charleston sewage treatment plant, and the Shipyard River Coal terminal. The Neck Area has historically served heavy industry because of access to deep water, rail lines, and the interstate, and its distance from residential uses (Charleston 2000 Plan).

3.1.3 Local Land Use Plan and Land Development Regulations

The Base is geographically located within the City of North Charleston, although it is not within the jurisdiction of the city for planning and zoning purposes. However, future development will, for planning and zoning purposes, be regulated by the city. Land use within the City of North Charleston is guided by the city's Comprehensive Development Plan and implemented through the city's land use codes. This section discusses the city's Comprehensive Plan and applicable land use codes as they relate to the potential reuse of the Base. Also included is a brief discussion concerning land use policies for the Neck Area and Windsor and Union Heights Neighborhoods.



City of North Charleston Comprehensive Development Plan

The City of North Charleston was incorporated in June 1972. After the city's incorporation, the Planning Commission was tasked with developing a plan to guide development within the North Charleston Planning Area. In 1975, the City of North Charleston adopted a Comprehensive Development Plan that still acts as the development guide for the city. In 1985, the Planning Commission for the City of North Charleston approved an updated Comprehensive Development Plan; however, the City Council did not officially adopt the plan.

The primary intent of the 1975 plan was to analyze existing development trends, establish a framework for future growth, and have citizens participate in determining how the city should develop. The plan is divided into five parts: the intent and goals of the community, economic and population growth potential, analysis of existing land use and transportation systems, land use and transportation plan through 1995, and the mechanisms for plan implementation (City of North Charleston Comprehensive Development Plan 1975).

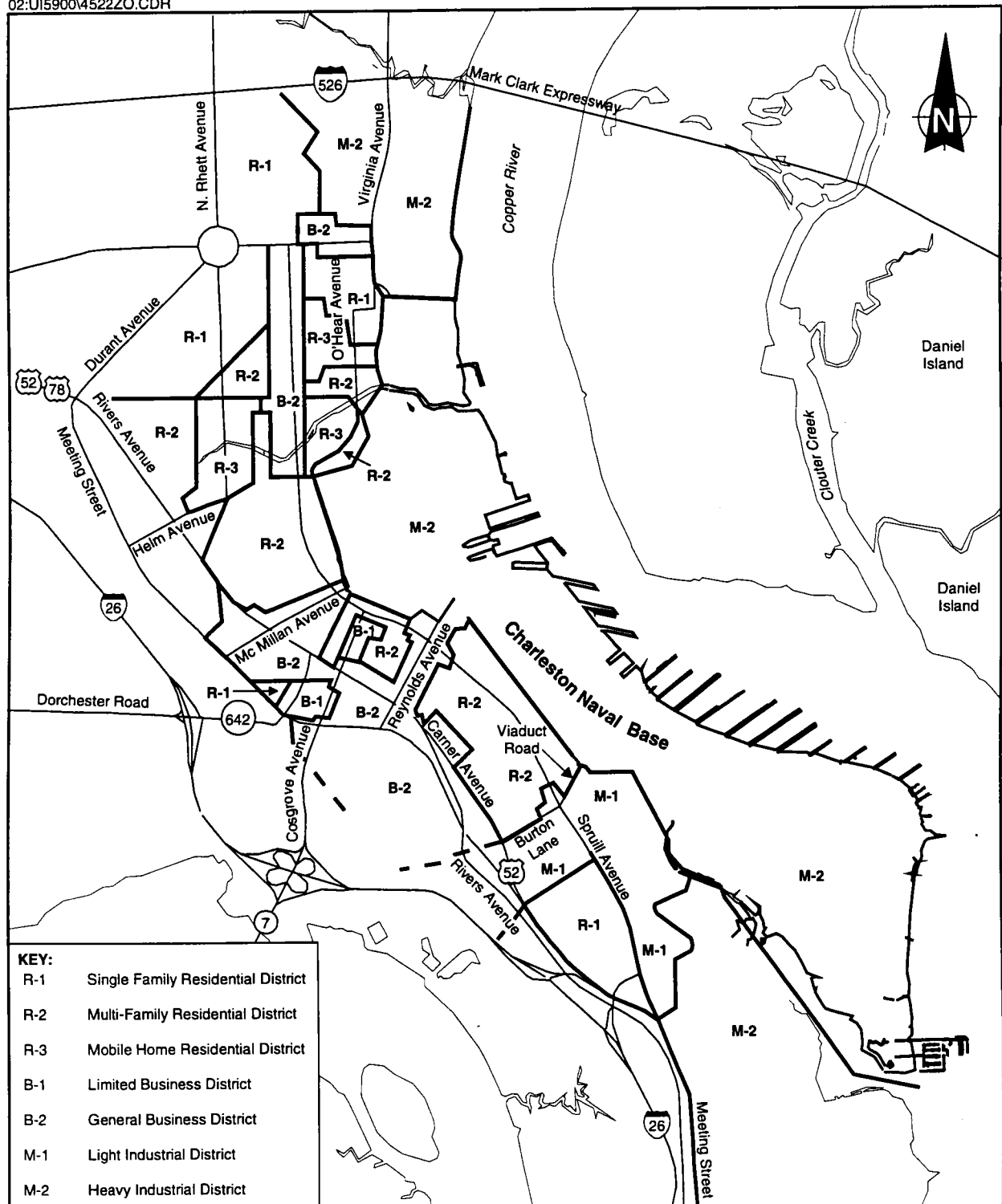
City of North Charleston Subdivision Regulations

The city's subdivision regulations were adopted by the City Council in 1975, along with a city road code that establishes design standards for public street and utility drainage systems. The subdivision regulations contain minimum standards for the division of land, ensure that community facilities are in accordance with municipal standards, provide a means for accurate recording of land subdivision, and implement the components of the Comprehensive Development Plan.

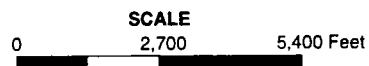
City of North Charleston Zoning

The City of North Charleston's zoning regulations, as amended, are provided in Appendix A of the Code of Ordinances of the City of North Charleston, South Carolina, adopted February 28, 1974. The ordinance regulates the use, size, and location of buildings and other structures. The ordinances regulate yard size and provide for administration, enforcement, and appeal mechanisms, and for the imposition of penalties for violations of the provisions of the ordinance.

Zoning designations for the Base and the surrounding areas are shown on Figure 3-3. The majority of the Base west of the Cooper River is zoned for heavy industrial (M-2) with the exception of the Naval Hospital, which is zoned general business (B-2), and the Chicora Tank Farm, which is zoned multi-family residential (R-2). The M-2 designation is intended



SOURCE: Ecology and Environment, Inc. 1994

**Figure 3-3 ZONING IN THE VICINITY OF CHARLESTON NAVAL BASE**

to provide areas for commercial, manufacturing, storage, and transportation-related activities. Permitted uses include industrial uses and processing plants, bulk storage of any petroleum product, transportation facilities to support such uses, and all land use permitted in the less intense B-2 and M-1 zoning districts except residential units.

Zoning districts that surround the Base include a mix of residential, business, and industrial uses. These include:

- R-1 single family residential district;
- R-2 multi-family residential district;
- R-3 mobile home residential district;
- B-2 general business district;
- M-1 light industrial district; and
- M-2 heavy industrial district.

R-1 Single Family Residential District

The intent of this district is to reserve appropriate land for medium-density, one-family residential uses. The district permits single family homes but excludes mobile homes. Conditional uses are home occupations, churches and private schools, cemeteries, and public recreation facilities.

R-2 Multi-Family Residential District

The R-2 district is reserved for medium- to high-density residential purposes. The regulations are designed to encourage single and multi-family development and discourage the encroachment of the majority of nonresidential activities. Permitted uses include multi-family dwellings and all uses permitted in the R-1 district.

R-3 Mobile Home Residential District

The R-3 district is designed to encourage the formation of a mixture of residential units, including single family and multi-family dwellings and mobile homes, and to discourage the encroachment of most nonresidential activities. Permitted uses include mobile homes on lots of record and in mobile home parks, and all permitted uses listed in R-1 and R-2.

B-2 General Business District

The B-2 District establishes appropriate land reserved for general business purposes with particular consideration for automobile-oriented commercial development. The regulations are designed to create an environment for business, financial, and professional services, which benefit from being in proximity to each other. Permitted uses include a wide range of retail, service, residential, and commercial recreation activities.

M-1 Light Industrial District

The M-1 district provides an area for commercial, warehousing, transportation, and certain light manufacturing activities. Permitted uses include all uses permitted in B-2 except residential development. Additional permitted uses are establishments engaged in construction or building activities, service-oriented establishments supplying other businesses, and transportation centers for the interchange of freight.

M-2 Heavy Industrial District

The intent of the M-2 district is to provide areas for commercial, manufacturing, storage, and transportation-related activities. Permitted uses include bulk storage of petroleum and related activities, industrial uses and processing plants, transportation facilities, and all uses permitted in the B-2 and M-1 districts except residential uses.

Land Use Policies for the Neck and Windsor and Union Heights Areas

The City of Charleston controls development in the Neck Area. On November 26, 1991, the Charleston City Council adopted the Charleston 2000 Plan. The plan designates the future land use of the Neck Area as heavy industrial, which is consistent with current land uses. In 1980, the Charleston County Commission adopted a zoning plan for the Windsor and Union Heights Neighborhoods. The zoning plan specifies that the internal portion of the Windsor and Union Heights Neighborhoods will remain residential and designates parcels along Meeting Street and Spruill Avenue eligible for rezoning to nonresidential activities.

3.1.4 Aesthetic Resources

Aesthetic resources relate to the interaction among what we sense, how we sense it, and our response to it. At the Naval Base, these resources vary considerably among each functional area described in Section 3.1.1 and are characterized by visual form, circulation and access, and functional areas and their linkages. The Shipyard area is completely

developed with large manufacturing and storage buildings, dry docks, and piers. Visual indications of the shipyard's function as an industrial area is readily apparent. The majority of the shipyard is impervious surface with buildings of various styles, sizes, and orientations. Aboveground utilities, such as steam lines, are easily identified.

The Fleet Industrial Supply Center (FISC) is located in the northern part of the property and consists of a predominantly impervious industrial warehouse storage area with little aesthetic value. South of FISC is the Base golf course adjacent to the Noisette Creek marshland. The marshland offers a natural vista largely composed of open expanses of marsh grasses that traverse the Base east to west. South of the creek is officer housing, formerly the site of the old Turnbull Plantation. The housing area is characterized by winding streets, minor grade changes, large lot single family homes, and lawns with scattered trees and landscape shrubbery. Northeast of Turnbull Gate is the old Naval Hospital surrounded by single-family and multi-family officer housing. The hospital has unique architectural characteristics and is surrounded by landscaped open space that blends well with the adjacent housing.

Located in the southwest portion of Base South is a large dredge material area covered by a dense tangle of brush, vines, and small trees. The area is largely undeveloped with the exception of a marina and parking lot, some munitions bunkers, and several small buildings. Beyond the dredge spoil mound to the west, the large industrial facilities of the Shipyard Creek and Neck areas can be seen. In the southeast portion of the property along the waterfront and Hobson and Bainbridge Avenues, intense development occurs. The area is characterized by large expanses of impervious surfaces consisting of parking pavement and buildings. Aboveground utilities such as steam lines detract from the overall visual quality of the area.

West of Hobson Avenue and north of Viaduct Road lies the majority of Base West, an area dominated by playing fields and pavement with scattered buildings. There is minimal natural vegetation other than the playing fields. Visually pleasing views from the area are limited. Directly east, toward the Cooper River, is the Shipyard, and to the south near the Viaduct Road Gate is a tank farm. North, near the McMillan Gate, the area is dominated by a large parking area and numerous old warehouses.

3.2 Terrestrial and Aquatic Environment

3.2.1 Vegetation

Naturally occurring vegetation on the Charleston Naval Base has been greatly altered by the existing land use developments on site. These land uses include the Controlled Industrial Area (CIA), which contains little vegetation of any sort, urban areas, residential areas, recreational areas, and dredge disposal areas. Only the southern end of the Base contains significant amounts of native vegetation, much of which is associated with the dredge disposal area. This area is in various states of succession, from herbaceous fields on the dredge disposal site, to wooded areas that serve as a buffer around the dredge disposal area. Wetland areas occupy much of the lands that have been minimally disturbed, primarily the intertidal zone and adjacent lands to Noisette Creek and Shipyard Creek. Wetland areas are discussed more fully in Section 3.3.1. The remaining vegetated areas are discussed in the following sections. A general map outlining the land cover identified on the Base is shown in Figure 3-4.

Officers Housing Area

Vegetation within the officers housing area consists of maintained lawns and landscaped natural and exotic trees and shrubs, typical of residential areas. Typical tree species include a wide variety of oaks (*Quercus* spp.), with many of the mature trees draped with Spanish moss (*Tillandsia usneoides*), pines (*Pinus* spp.), maples (*Acer* spp.), and magnolias (*Magnolia* spp.). Planted shrubs include privet (*Ligustrum* spp.), and laurels and azaleas (*Rhododendron* spp.). Many of the mature trees within this area were damaged during Hurricane Hugo in 1989. An active replanting program was undertaken in the years following this storm to replace lost trees. Approximately 1,000 trees were planted throughout the Base to replace lost trees (Williams 1994).

Urban Areas/Recreational Areas

These areas generally constitute the remainder of the Base proper, outside the CIA and the officers housing area, extending down to the undeveloped southern end of the Base. As shown on Figure 3-4, these areas include the administration facilities, housing quarters for the enlisted, and various other support buildings. Clusters of landscaped trees and shrubs are scattered across the Base, generally situated around the many buildings on site, all of which have maintained lawn. Areas used for recreation, including the golf course at the northern

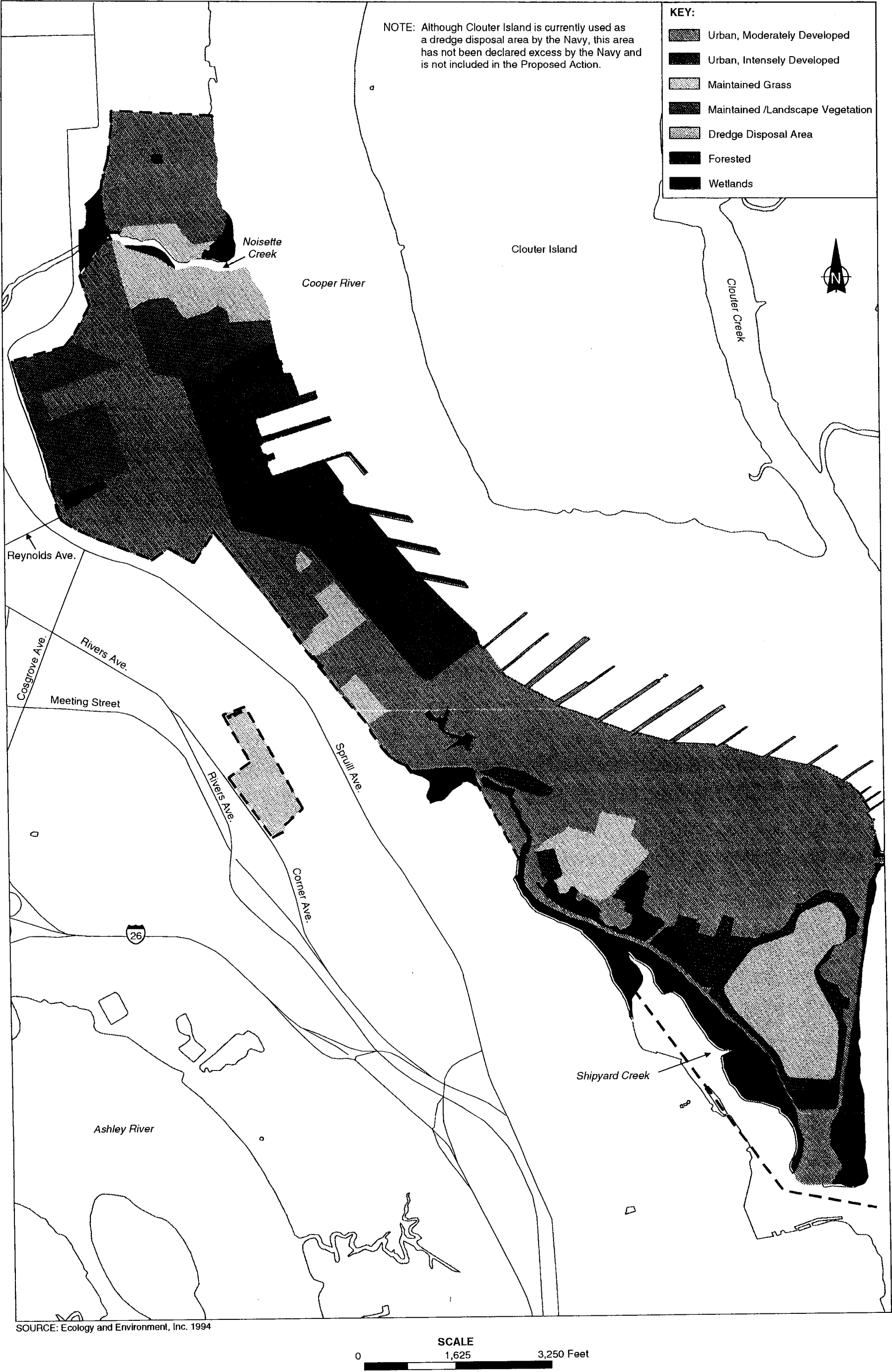


Figure 3-4 VEGETATIVE COVER AT CHARLESTON NAVAL BASE

end of the Base and the recreational fields scattered across the Base, are maintained in mowed grassy conditions with scattered trees and shrubs.

Many of the roadways throughout the facility are lined by palmetto trees (*Sabal palmetto*). Many of these isolated trees or groups of trees scattered across the Base were damaged beyond repair by high winds during Hurricane Hugo and have since been replaced. Because of the relative mature age of the ornamental vegetation on Base, an attempt was made to replace damaged vegetation with trees of moderate size (2- to 5-inch diameter at breast height) for aesthetic purposes (Williams 1994).

Dredge Disposal Area

This area, located toward the southern end of the Base, is a bermed area that has historically been used for disposal of dredged sediments from the adjacent waterbodies. The bermed boundary of the site is approximately 10 to 12 feet higher than the surrounding area. Elevations within the bermed area range from 0 to 10 feet below the top of the berm. This area exhibits various stages of secondary succession. Most of the area is vegetated with either herbaceous vegetation or scrubby vegetation. Representative herbaceous species include broomsedge (*Andropogon virginicus*), sweet clover (*Melilotus officinalis*), goldenrods (*Solidago* spp.), and ragweed (*Ambrosia* spp.). The predominant shrubby species include red mulberry (*Morus rubra*), southern hackberry (*Celtis laevigata*), wax myrtle (*Myrica cerifera*), and groundsel-tree (*Baccharis halimifolia*). Typically intertwined among the shrubby vegetation is a dense thicket of vines, including honeysuckle (*Lonicera* spp.), pepper-vine (*Ampelopsis arborea*), and greenbriers (*Smilax* spp.). Areas with open water include cattails (*Typha* spp.), reed (*Phragmites australis*), and willow (*Salix* spp.).

Wooded Undeveloped Land

Much of the southern tip of the Naval Base surrounding the dredge disposal area has remained primarily undeveloped. Because of the activities on Base, specifically, the creation of the shell/gravel road along the shoreline of the Cooper River and Shipyard Creek, this area has been removed from tidal influence. As a result, much of this area has been allowed to undergo secondary succession to the point where woody vegetation dominates. The species composition of these wooded areas are similar to the shrubby areas found on the spoil area. The dominant overstory trees are red mulberry and southern hackberry. Because of the relative young age of the woodlots, growth is quite dense, and little herbaceous development is possible. Shrubs present along the edges of the woods include wax myrtle, groundsel-tree,

the introduced tallow tree (*Sapium sebiferum*), red cedar (*Juniperus virginiana*), and tamarisk (*Tamarix gallica*). The viney growth is quite thick in areas, with honeysuckle and pepper vine predominating. Sweet clover and verbena (*Verbana* spp.) are common herbaceous plants along the wooded edges.

3.2.2 Wildlife

Terrestrial Wildlife

Wildlife at the Base can find forage and shelter in a variety of cover types, ranging from residential to woodland, to the extensive adjacent coastal areas. These various habitats at the Base support a diversity of mammalian, herptilian, and avian wildlife. With the relative isolation of portions of the Base, in conjunction with the abundant coastal habitat, the greatest diversity of wildlife is found in the avian fauna.

Because of the relative isolated nature of the Base (i.e., extensive development to the west and the Cooper River to the east), the mammalian species on site are restricted to smaller species. The largest mammals on site include the raccoon (*Procyon lotor*) and opossum (*Didelphis virginiana*), although the gray fox (*Urocyon cinereoargenteus*) may also occur on site. Other mammalian species occurring on site include the grey and fox squirrels (*Sciurus carolinensis* and *S. niger*), eastern cottontail and marsh rabbits (*Silvilagus floridanus* and *S. palustris*), golden mouse (*Ochrotomys nuttalli*), and short-tailed shrew (*Blarina brevicauda*).

A variety of reptiles and amphibians were noted or are expected to occur on site. Representative species include northern diamond back terrapin (*Malaclemys terrapin terrapin*), green anole (*Anolis carolinensis*), broad-headed skink (*Eumeces laticeps*), eastern garter snake (*Thamnophis sirtalis*), and the southern leopard frog (*Rana utricularia*).

Numerous avian species use the Base and surrounding area, including species commonly occurring in developed areas, in open field and edge communities, and along coastal areas. Because of the extensive coastal habitat present in the vicinity of the site, the Charleston Naval Base has the potential to be sporadically used by a multitude of transient avian species in addition to the species typically found on the Base. Species typical of developed/residential areas include the American robin (*Turdus migratorius*), northern cardinal (*Cardinalis cardinalis*), purple finch (*Carpodacus purpureus*), fish crow (*Corvus ossifragus*), European starling (*Sturnus vulgaris*), and a variety of gulls (*Larus* spp.). Open fields and edge communities will typically support higher concentrations and diversity of

species, including Carolina chickadee (*Parus carolinensis*), northern junco (*Junco hyemalis*), eastern kingbird (*Tyrannus tyrannus*), eastern meadowlark (*Sturnella magna*), mockingbird (*Mimus polyglottis*), and barn swallow (*Hirundo rustica*). Because of the minimal acreage of woodland, few forest interior avian species are expected to inhabit the Base except during seasonal migrations. Raptors including the red-tailed hawk (*Buteo jamaicensis*) and the American kestrel (*Falco sparverius*) may also use the area. Coastal tidal cordgrass wetlands are typically used by the clapper rail (*Rallus longirostris*), boat-tailed grackle (*Quiscalus major*), and red-winged blackbird (*Agelaius phoeniceus*). Tidal mudflats are used by a multitude of wading birds, including the larger egrets, herons, and bitterns (*Family Ardeidae*) and the smaller plovers (*Chardrius* spp.), curlews (*Numenius* spp.), and sandpipers (*Tringa* spp. and *Calidris* spp.). The open water of the Cooper River is used by a variety of gulls and terns (*Sterna* spp.), as well as pelicans (*Pelecanus occidentalis*) and osprey (*Pandion halieatus*).

Aquatic Wildlife

The Cooper River, Ashley River, and Wando River make up the basis for the Charleston Harbor Estuary. This estuary system is an ecologically complex system that supports a wide diversity of estuarine aquatic fauna with more than 570 macroinvertebrate and finfish species. Of all the finfish, 10 of the dominant species captured by trawl accounted for at least 94% of the total fish captured (Van Dolah, Martone, and Davis 1989). The estuary provides seasonal habitat, and year-round habitat for both adult and juveniles of many species of fish, crustaceans, and shellfish, many of which are commercially and recreationally important. Although most commercial fishing in the estuary is minimal, the Charleston Harbor estuary produces approximately 20% of South Carolina's annual shrimp harvest of 3.24 million pounds. (Van Dolah, Martone, and Davis 1989). The estuary's wetlands, marshes, and tidal creeks are an important nursery for the recruitment of most of the important fisheries.

The aquatic biological diversity of the Cooper River is relatively lower than that of the Ashley or Wando rivers, which is likely a reflection of the higher concentration of industrial and commercial port facilities located on the river. However, the river still supports many important species. The commercial fishery resources in the Cooper River near the shipyard consist of some crabbing for blue crab (*Callinectes sapidus*) and a seasonal elver (young American eels, *Anguilla rostrata*) fishery (Cupka 1994). The recreational fishery near the Base consists of both the Cooper River proper, as well as the smaller tidal Noisette and

Shipyard creeks. Typical finfish catches include sheephead (*Archosargus probatocephalus*), flounder (*Paralichthys* spp.), mullet (*Mugil* spp.), drum (*Stellifer* spp.), and spotted seatrout (*Cynoscion nebulosus*). In addition, shrimp and blue crabs are also sought by the recreational fisherman. Field observations additionally identified shellfish beds of oysters (*Crassostrea virginica*), and various clams and mussels within each of the two tidal creeks. Of ecological importance in the vicinity of the Base are large numbers of bay anchovy (*Anchoa mitchelli*), menhaden (*Brevoortia tyrannus*) and grass shrimp (*Palaemonetes* spp.), which are the major forage base for many higher trophic level species.

The intertidal zones, between the open waters of the Cooper River and its tributaries, and the uplands of the Base, are host to numerous organisms, including fiddler crabs (*Uca* spp.), mud crabs (*Eurytium* spp.), periwinkle (*Littorina* spp.), mud snails (*Nassarius* spp.), and a multitude of immature insects, oligochaetes, and annelid worms (Mitsch and Gosselink 1986). These organisms play an important role in the intertidal ecosystem as detritus-algal feeders.

Threatened and Endangered Species

The United States Fish and Wildlife Service (USFWS) and the South Carolina Wildlife and Marine Resources Department (SCWMRD) were contacted concerning the presence of species of concern in the vicinity of the Charleston Naval Base. Additionally, the Navy previously contracted for surveys for endangered plant species (U.S. Department of the Navy 1985). Based on agency contacts, several rare or endangered species or communities have been reported in the area, or have the potential to occur in the vicinity of the Base. Table 3-1 provides a list of species that potentially could occur at the Base. Table 3-1 additionally identifies those species having either historical sitings, or recently identified locations at, or near, the Base. Species of concern and significant communities likely to occur on, or near, the Base and that may be impacted by the proposed action are discussed below.

Least Tern (*Sterna antillarum*) Colonies

Two buildings, the Enlisted Club and Warehouse 224, have been identified as containing nesting colonies of the state-listed threatened Least Tern. Typically, this species uses beach areas above the reach of ordinary high tide. However, because of increased development pressures on their natural habitats, the terns have resorted to using rooftops with white crushed rock or peagravel substrates. The use of these rooftop colonies likely fluctuates

Table 3-1				
FEDERAL AND STATE LISTED THREATENED, ENDANGERED AND CANDIDATE SPECIES THAT OCCUR OR POTENTIALLY OCCUR ON THE CHARLESTON NAVAL BASE, SOUTH CAROLINA				
Species		Residence Status	Status	
Common Name	Scientific Name		USF&WS	SCWMRD
Reptiles and Amphibians				
American Alligator	<i>Alligator mississippiensis</i>	PR	T/SA	T/SA
Flatwoods Salamander	<i>Ambystoma cingulatum</i>	UR	C2	SC
Eastern Tiger Salamander	<i>Ambystoma tigrinum tigrinum</i>	PR	—	SC
Broad-Striped Dwarf Siren	<i>Pseudobranchius striatus striatus</i>	PR	—	SC
Crawfish Frog	<i>Rana areolata</i>	PR	—	SC
Loggerhead Turtle	<i>Caretta caretta</i>	PM	T	T
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempi</i>	PM	E	E
Island Glass Lizard	<i>Ophisaurus compressus</i>	UR	C2	SR
Birds				
Brown Pelican	<i>Pelecanus occidentalis</i>	LM	—	SC
Wood Stork	<i>Mycteria americana</i>	LM	E	E
Osprey	<i>Pandion haliaetus</i>	CR	—	SC
American Swallow-Tailed Kite	<i>Elanoides forficatus forficatus</i>	PM	—	E
Bachman's Sparrow	<i>Aimophila aestivalis</i>	UR	C2	SR
Red-Cockaded Woodpecker	<i>Picoides borealis</i>	UR	E	E
Bachman's Warbler	<i>Vermivora bachmanii</i>	UR	E	E
Bald Eagle	<i>Haliaeetus leucocephalus</i>	LM	E	E
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	PM	T	T
Piping Plover	<i>Charadrius melodus</i>	PM	T	T
Least Tern	<i>Sterna antillarum</i>	CR	—	T
Mammals				
Black Bear	<i>Ursus americanus</i>	UM	—	SC
West Indian Manatee	<i>Trichechus manatus</i>	PM	E	E
Southeastern Myotis	<i>Myotis austroriparius</i>	PR	C2	—
Rafinesque's big-eared bat	<i>Plecotus rafinesquii</i>	PR	C2	SE

Key at end of table.

Table 3-1				
FEDERAL AND STATE LISTED THREATENED, ENDANGERED AND CANDIDATE SPECIES THAT OCCUR OR POTENTIALLY OCCUR ON THE CHARLESTON NAVAL BASE, SOUTH CAROLINA				
Species		Residence Status	Status	
Common Name	Scientific Name		USF&WS	SCWMRD
Fish				
Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	LM	E	E
Plants				
Canby's Dropwort	<i>Oxypolis canbyi</i>	UR	E	E
Pondberry	<i>Lindera melissifolia</i>	UR	E	E
Incised Groovebur	<i>Agrimonia incisa</i>	UR	C2	NC
Sea-Beach Pigweed	<i>Amaranthus pumilus</i>	UR	T	NC
Cypress Knee Sedge	<i>Carex decomposita</i>	UR	—	—
Chaff-Seed	<i>Schwalbea americana</i>	UR	E	NC
Whisk Fern	<i>Psilotum nudum</i>	UR	—	SL
Climbing Fern	<i>Lygodium palmatum</i>	UR	—	SL
Piedmont Flatsedge	<i>Cyperus tetragonus</i>	PR	—	SL
Baldwin Nutrush	<i>Scleria baldwinii</i>	UR	—	SL
Nodding Pogonia	<i>Triphora trianthophora</i>	UR	—	SL
Savannah Milkweed	<i>Asclepias pedicellata</i>	UR	—	RC
Venus' Fly-Trap	<i>Dionaea muscipula</i>	UR	—	RC
Sweet Pinesap	<i>Monotropsis odorata</i>	UR	—	RC
Climbing Fetter-Bush	<i>Pieris phillyreifolia</i>	UR	—	SL
Sea Purslane	<i>Trianthema portulacasfrum</i>	CR	—	SC
Communities				
Least Tern Breeding Colony		CR	—	SC
Wading Bird Breeding Colony		CR ^a	—	SC

^a Wading bird colony has been confirmed present at the base in prior years, but was not present during field studies in April 1994.

Table 3-1 (Cont.)

Key:

CM = Confirmed Migrant or Occasional Visitor.
CR = Confirmed Resident.
C2 = Candidate Species for Federal Listing, Category 2.
E = Endangered.
LM = Likely Migrant or Occasional Visitor.
LR = Likely Resident.
NC = Of Concern, National.
PM = Possibly Migrant or Occasional Visitor.
PR = Possible Resident.
RC = Of Concern, Regional.
SC = Of Concern, State.
SCWMRD = South Carolina Wildlife and Marine Resources Department.
SL = State Listed.
SR = Status Review.
T = Threatened.
T/SA = Threatened due to Similarity of Appearance.
UM = Unlikely Migrant or Occasional Visitor.
UR = Unlikely Resident.
USF&WS = U.S. Fish and Wildlife Service.

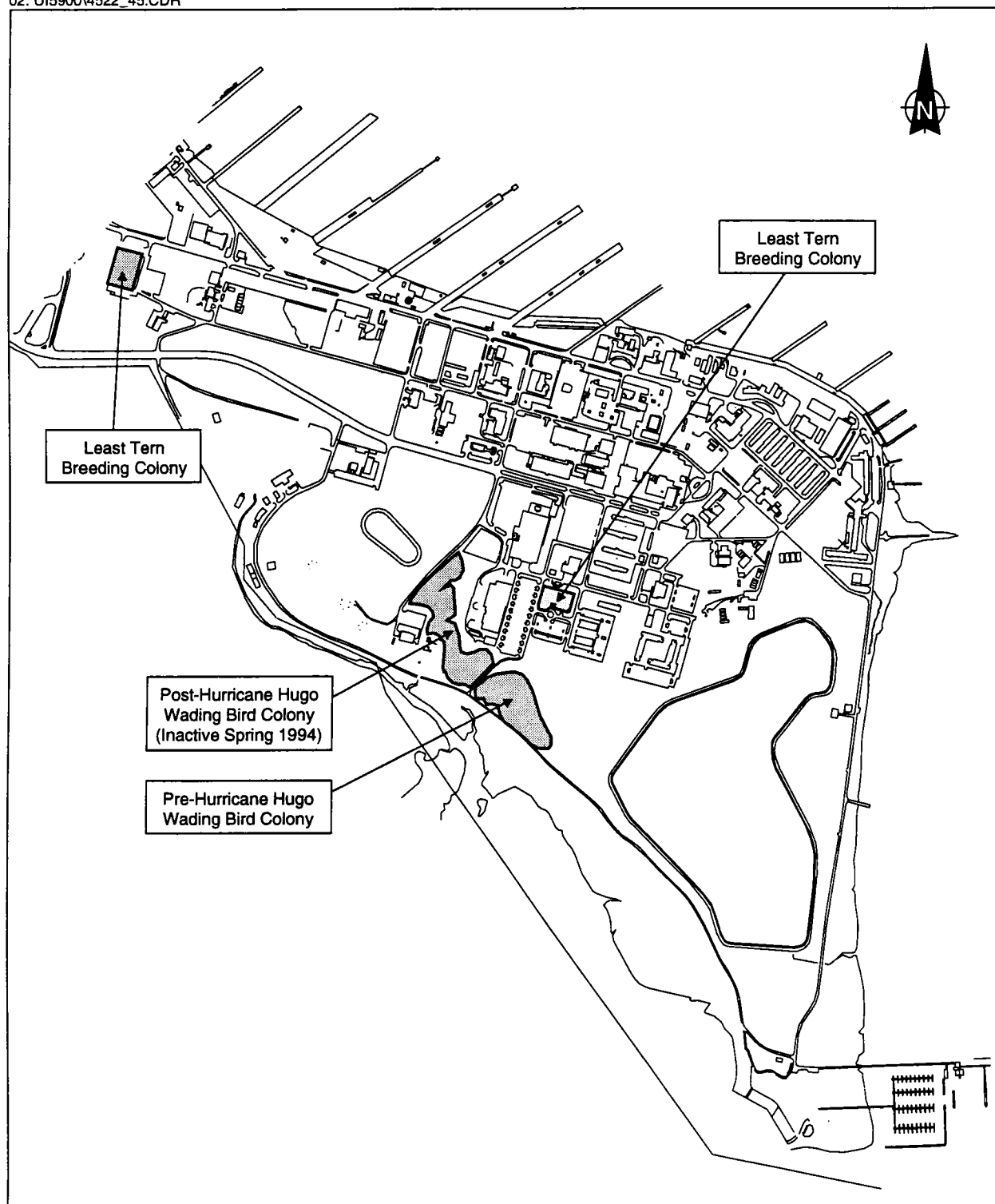
Source: Natural Resources Management Plan for Naval Base Charleston, South Carolina 1992; United States Fish and Wildlife Service, Charleston, South Carolina 1995.

from year to year. Observations in 1992 indicated that only one of these rooftops was being actively used (Boyle 1994). Observations during 1994 seem to indicate activity at both rooftop sites on the Base (E & E 1994). An additional breeding colony has been identified off base at the Baker Medical Center, which is located approximately 1 mile from the Base. Figure 3-5 identifies the locations of the breeding colonies on the Base.

The 1994 Least Tern nest counts indicated that of the 1,660 nesting pairs of Least Terns in South Carolina, about 60% used rooftop nesting sites. This same study indicated that 23 pairs of Least Terns were nesting on the Enlisted Club and Warehouse 224 (Murphy 1994). This accounts for about 1.5% of the statewide Least Tern nesting population, which is a decrease from the 8% that resided in the area in 1990.

Colonial Waterbird Nesting Colonies

The undeveloped forested portion of the Base adjacent to Shipyard Creek has recently been used by nesting waterbirds. Typical species include white ibis (*Eudocimus albus*), little blue herons (*Florida caerulea*), Louisiana herons (*Hydranassa tricolor*), snowy egrets (*Egretta thula*), cattle egrets (*Bubulcus ibis*), and black-crowned night herons (*Nycticorax nycticorax*). Although not identified as occurring at the base, any occurrence of endangered wood stork (*Mycteria americana*) would likely be associated with the wading bird colonies. Wading bird rookeries typically are located in isolated areas that contain significant numbers of mature trees and snags that are located 10 to 20 feet above ground surface generally over water. The site on the Base is not characterized by the presence of either multiple mature trees or snags, possibly because of hurricane damage. Also, the identified rookery sites on the base are not located over permanent bodies of water but rather, seasonally flooded wetlands. Consequently, combined with the human activity at the Base, the two wooded areas that have been used by the birds only provide marginal habitat for wading bird colonies. The original colony established on the Base (unknown startup date) was eliminated by Hurricane Hugo in 1989. A second colony, re-established adjacent to the original site and identified as active in 1992 (Boyle 1994), was not being used in spring 1994 (E & E 1994). SCWMRD indicated that this colony was severely impacted by local raccoon populations. With no permanent water to serve as a deterrent to predatory mammals, the colony in general is very susceptible to predation (Murphy 1994). Figure 3-5 shows the location of the wading bird colonies pre- and post-Hurricane Hugo.



SOURCE: Ecology and Environment, Inc. 1994

SCALE
0 1,625 3,250 Feet

**Figure 3-5 LOCATIONS OF WADING BIRD COLONIES
PRE- AND POST-HURRICANE HUGO**

Brown Pelican (*Pelecanus occidentalis*)

This state-listed species of concern was identified as using the Charleston Harbor estuary in the vicinity of the Base (E & E 1994). This species is likely only a visitor to the Base area, using the Cooper River and adjacent tidal creeks for forage. Little potential nesting habitat is available on the Base because the species typically will use small coastal islands for nest sites.

Osprey (*Pandion haliaetus*)

This state-listed species of concern is a confirmed resident at the Base, with the bird often attempting to nest on cranes and masts of ships. The adjacent waterways to the Base provide excellent forage habitat for the osprey. Several osprey were identified in the vicinity of the Base during field reconnaissance (E & E 1994). However, no active nesting sites were identified on the Naval Base.

Southeastern Myotis (*Myotis Austroriparius*) and Rafinesque's Big-Eared Bat (*Plecotus rafinesquii*)

Neither of these federally listed candidate-2 species has been identified as occurring at the Base. However, discussions with both federal (Duncan 1995) and state (Strayer 1995) biologists indicate that these species are both known to occur in the Charleston Harbor estuary and that either species could occur on the Base, using existing buildings with appropriate roosting space, such as attic space with high eaves.

Sea Purslane (*Trianthema portulacastrum*)

Typically found along stream and irrigation ditches, and in sandy shores, flats, and spoil banks, this rare vascular plant was found on the dredge spoil disposal area at the southern end of the Base (Porcher 1993). Because of the introduction of extensive non-native material to these dredge disposal areas, it is not entirely unexpected that an uncommon species may be capable of establishing on the disturbed area. Although designated as a species of concern, this plant has no legal protection in South Carolina.

Transient Marine Species

Various marine species are known or suspected to use the Charleston Harbor. All of these species are only infrequent visitors to the Cooper River, and none has potential breeding habitat near the Base. These species include the loggerhead turtle (*Caretta caretta*), Kemp's

Ridley sea turtle (*Lepidochelys kempi*), West Indian manatee (*Trichechus manatus*), and the shortnose sturgeon (*Acipenser brevirostrum*).

3.3 Wetland Areas and Floodplains

3.3.1 Wetland Areas

Wetland areas and potential wetland areas on the Charleston Naval Base were identified using existing USFWS National Wetland Inventory (NWI) maps, aerial photography, discussions with USACE personnel and ground truthing conducted during April 1994. Historically, most of the land now occupied by the Naval Base was wetland, primarily tidal marshland. During the development of the naval facility, extensive amounts of fill material were used to raise the elevation grade for construction activities. Additionally, dredged materials from the adjacent water bodies were deposited on the undeveloped southern end of the Base. As a result, with the exception of the tidal mudflats and *Spartina* marshes in the tidal creeks and the Cooper River, little native earth is still present as an overlying surface layer. Therefore, soils, which are one of the three criteria for delineating jurisdictional wetlands, were not very useful in determining wetland boundaries in this instance. Rather, vegetation and apparent or observed hydrology were used to estimate wetland boundaries. None of the identified wetland areas were fully delineated. Each identified wetland area was, however, ground verified to generally characterize the wetland and to arrive at an estimate of total wetland acreage at the Base that may be impacted by any future reuse activities. The evaluation conducted at the base identified scattered areas of wetland, too small to be adequately mapped, interspersed across the southern end of the base. Conversely, the identified wetland areas identified on Figures 3-6 and 3-7 likely have been drawn to include minor areas that are uplands. This preliminary evaluation does not preclude the need for a full delineation to be conducted in conjunction with future project implementation, as would be required by the USACE pursuant to Section 404 of the Clean Water Act. When feasible, the estimated boundaries were identified in-field using a global positioning system (GPS). Major wetland areas on the Base are identified on Figures 3-6 and 3-7. Individual wetland types are discussed below.

Estuarine Subtidal (E1)

In the vicinity of the Charleston Naval Base, these estuarine wetlands consist of the open-water nonvegetated portions of the Cooper River, Shipyard Creek, and Noisette Creek that do not become exposed at low tide. All of these wetlands have been classified as having

unconsolidated bottom substrate (UB) (USFWS 1988). The subtidal wetlands in Noisette Creek are relatively unaffected by dredging activities. Shipyard Creek is dredged to maintain a shipping channel. The Cooper River is significantly altered, with the Navy conducting maintenance dredging around its piers to maintain operational depths of 15 to 35 feet. As these wetlands extend out into the Cooper River and Shipyard Creek beyond the boundary of the Naval Base, total acreages on site were not calculated.

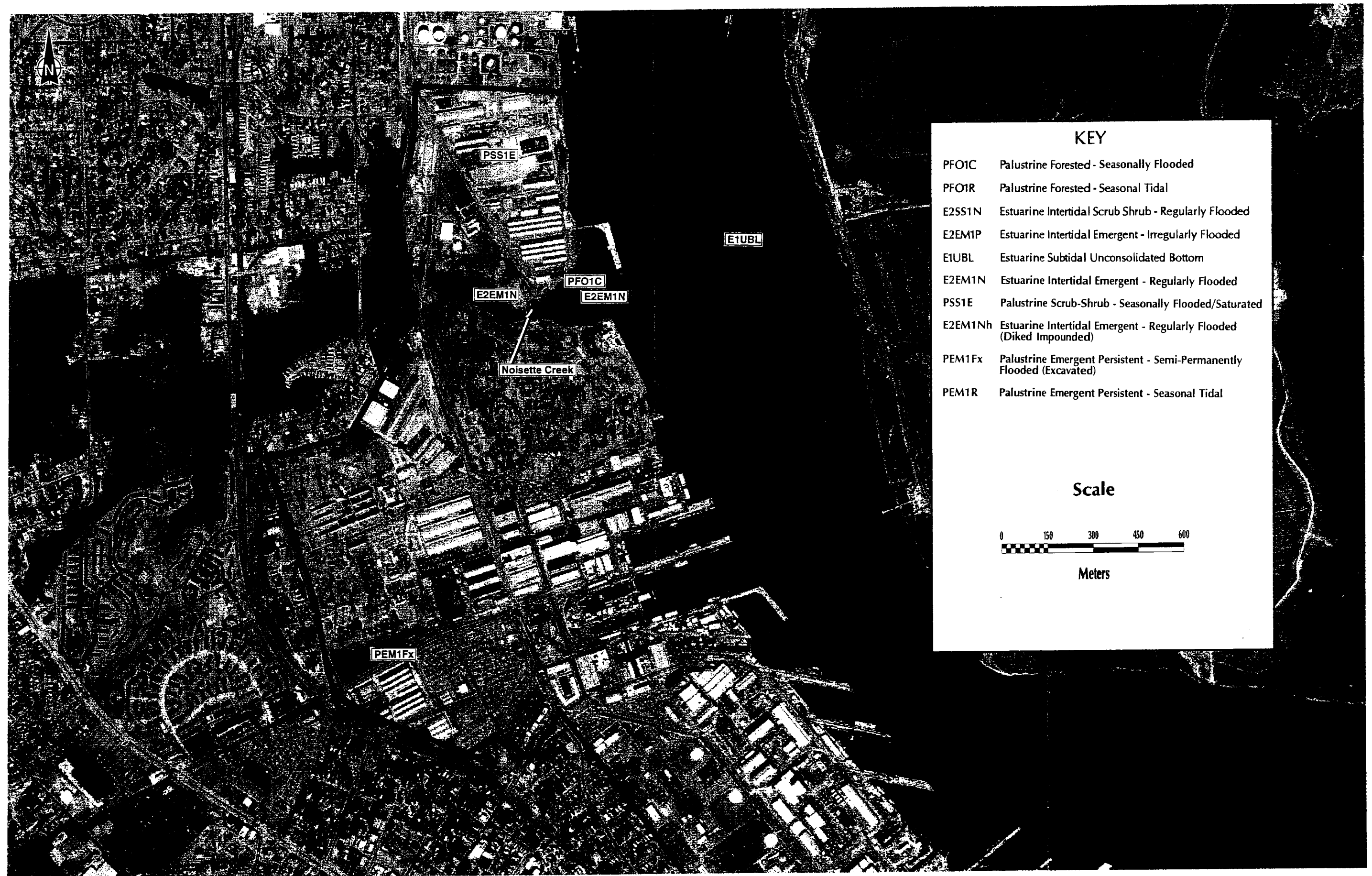
Estuarine Intertidal (E2)

The intertidal wetlands in the vicinity of the Charleston Naval Base consist of frequently, and infrequently, flooded wetlands on the margins of the Cooper River, Shipyard Creek, and Noisette Creek. These wetlands include both mud flats and salt marshes that predominate along most estuarine systems in South Carolina.

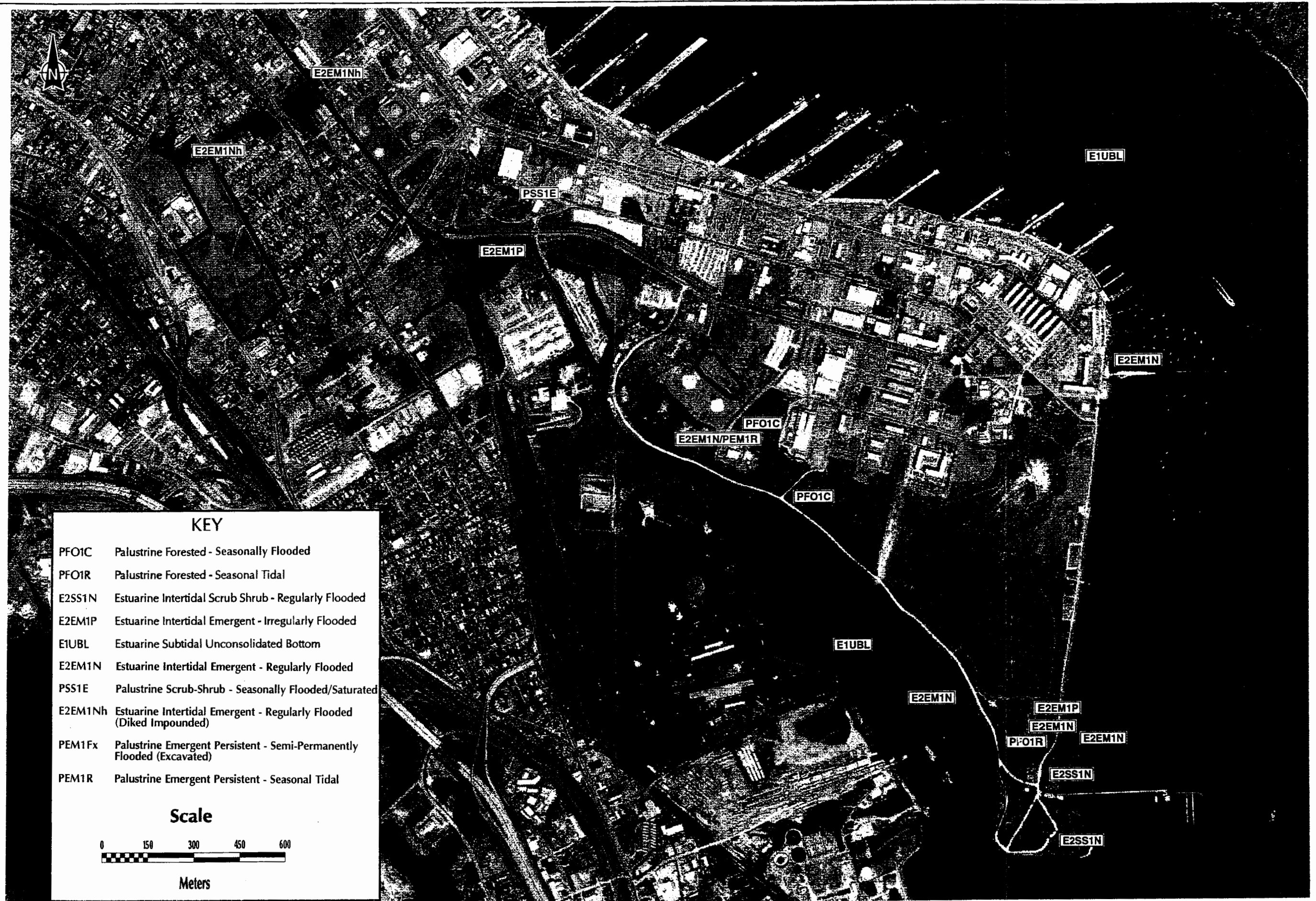
The shallow shore areas of these wetland types form the critical mud and sand flats that are constantly covered and uncovered during daily tidal fluctuations. Little vegetation is apparent although these areas teem with microscopic diatoms and blue-green algae. These exposed flats provide a rich source of food for scavenging mammals and wading birds. In the project vicinity, the bottom substrate is generally composed of silts and clays with minor concentrations of sandy bottom. These intertidal flats are primarily found along the Cooper River and in Shipyard Creek adjacent to the southern undeveloped areas of the base. Although, technically, these mudflat areas are classified separately from the *Spartina* marshes discussed in the following paragraph, for the purpose of this analysis, no distinction was made in mapping because these two systems are intricately tied together. Because of the overall development of the Charleston area, these intertidal wetlands play a valuable role in the regional ecosystem.

The nearshore areas within the intertidal zones are characterized by dense stands of emergent halophytic vegetation. Most of the emergent marshes are dominated by monotypic stands of smooth cordgrass (*Spartina alterniflora*). Patchy areas of saltmeadow grass (*S. patens*) and black needlerush (*Juncus roemerianus*) are often commonly found in association with the cordgrass. These marshes are very productive ecological systems. These marshes are prevalent in all of the waterbodies adjacent to the base, as well as the entire Cooper River/Charleston Harbor estuary.

At the southern end of the Base, an area of historic salt marsh has been nearly hydrologically isolated from the adjacent Shipyard Creek by the construction of a shell/gravel roadway. This area is identified in Figure 3-7 as E2EMIN/PEMIR. The impact of the tidal regime in this area is dictated by a single culverted tidal channel beneath the roadway. North



COPY 2 LBL



of this roadway, wetland areas are influenced by fresh water to a greater extent. Cattail (*Typha* spp.) is interspersed throughout the marsh north of the road, indicating that salinity is considerably lower in this area. It should be noted that this area has been impacted by activities on the Naval Base because it was used for landfill activities and encompasses a portion of Solid Waste Management Unit No. 9 (see Section 3.13).

In isolated areas where elevation is slightly higher or tidal influence is not as great, scrub-shrub communities (E2SS) have established and are dominated by sea ox-eye (*Borrchia frutescens*) and marsh elder (*Iva frutescens*). Estuarine scrub-shrub wetlands on site were identified only near the existing marina at the southern undeveloped end of the Base (See Figure 3-7). These wetlands form a narrow band between the intertidal marsh and the fill encountered around the perimeter of the Naval Base.

A total of approximately 105 acres of estuarine intertidal wetland were identified at the Base, with the majority located adjacent to the southern end of the base within the Cooper River and Shipyard Creek.

Palustrine Forested (PFO)

Several areas along Shipyard Creek and one area along Noisette Creek were identified as forested wetlands (see Figures 3-6 and 3-7). These areas likely were historic marsh areas that have received some fill material. Soil analysis revealed little stratification, indicative of disturbed conditions. These areas are directly hydrologically connected to the adjacent marsh areas either by direct contact or culvert. The area adjacent to Noisette Creek abuts frequently flooded *Spartina* marsh, and is dominated by willow and oak. The forested areas at the southern tip of the Base are separated from the marshes by a roadway and are hydrologically connected to the estuarine system by culverts. Examination of the ground in these areas revealed extensive amounts of periwinkle and snail shells, indicating some estuarine influence. Little herbaceous vegetation is present in these areas, indicating extended inundation, and defined drainage channels are present. These forested wetlands are isolated stands that serve more to increase the total wooded acreage on site for functional value. These wooded wetlands host a multitude of migratory songbirds, as well as wading birds.

Approximately 16.1 acres of potential palustrine forested wetland is located on the Base, with the majority located in the southern end of the Base.

Palustrine Scrub-Shrub (PSS)

Two areas were identified as characteristic of scrub-shrub wetlands, one associated with a drainage to Shipyard Creek and the second a disturbed area (see Figure 3-7).

The scrub-shrub wetland behind Warehouse 224 is dominated by willow, wax myrtle, and groundsel-tree. Cattail is interspersed through the wetland along the stream channel. Viney growth is dense, including pepper-vine, Virginia creeper, and wild grape (*Vitus* spp.).

The extensively disturbed area is located at the northern end of the Base. The vegetation was dominated by willow and groundsel-tree in the shrub strata, with cattails, rushes, and wool grass (*Scirpus cyperinus*) dominating the herbaceous vegetation. Soils analysis revealed a thin organic soil horizon overlying gravel. The wetlands are heavily impacted by adjacent activities, minimizing their use as habitat for all but songbirds; amphibious, small mammals; and, to lesser extent, crustaceans.

These two areas encompass approximately 3.0 acres on the Base.

Palustrine Emergent (PEM)

Several of the drainageways on the Base are characteristic of emergent wetlands. These swales are dominated by cattail with a variety of other herbaceous vegetation scattered throughout. Most of these drainageways are man-made, located adjacent to roadways, and are used to carry storm water off site. Because of their purpose and their primary function as storm water conveyance, these ditches are not regulated as wetlands and total acreages were not calculated for inclusion in this analysis.

Retention Basins

These areas are excavated basins that receive storm water runoff. Figure 3-6 identifies the location of each area. Two large detention areas, connected by a concrete spillway and having sloped concrete walls, are located toward the center of the Base near the intersection of McMillan Avenue and St. John's Avenue. Cattail is the dominant vegetation within the basins. Various other herbaceous vegetation, including sedges (*Carex* spp.) and rushes (*Juncus* spp.), are interspersed throughout the basins. Several culverts were noted, draining directly into the basin.

A much smaller retention basin, located near the oil storage tanks, was identified at the boundary of the Base. This basin is hydrologically connected, via culvert, to a larger tidally influenced *Spartina* marsh located outside the boundary of the Naval Base. This basin is sparsely vegetated; the sloped walls of the basin are riprap.

These retention basins occupy approximately 3.9 acres on the Base.

3.3.2 Floodplains

Because the Base is directly adjacent to the Cooper River, both the 100-year and 500-year floodplains encompass much of the Base. The coastal area along which the Naval Base is located is relatively flat, making it quite susceptible to flooding. The elevations across the site are mainly less than 10 feet National Geodetic Vertical Datum (NGVD), with the dredge spoil disposal area toward the southern end at approximately 12.5 feet NGVD, and elevations up to 15 feet NGVD toward the northern end. With the exception of the northern end of the Base, much of the elevation on the Base is a result of fill and construction activities.

With its location directly adjacent to the Cooper River, the Base is subject to extensive flooding resulting from hurricanes and tropical storms, and their related storm tidal surges and heavy rainfalls. The damage from Hurricane Hugo in 1989 is an example of the potential damage. Prior to development of the Naval facilities, this land area was a large expanse of coastal tidal marsh. These areas serve to assimilate tidal surges. Floodplain maps developed by the Federal Emergency Management Agency (FEMA) identify the 100-year flood event as encompassing lands under an elevation of 12 feet NGVD throughout the Base. Portions of the Cooper River shoreline realize storm surges up to 14 feet NGVD. The 100-year floodplain covers most of the Charleston Naval Base, as identified in Figure 3-8. Evaluation of the 500-year floodplain encompasses additional lands on the Base with elevations up to 15 feet NGVD (see Figure 3-8). Only the administration, community, and family housing facilities located near the Admiral's Headquarters fall outside the 500-year floodplain.

For more frequently occurring storms, FEMA has developed models to determine storm-surge elevations for 10- and 50-year events, also. These still water elevations reflect the storm surge of a given storm, combined with the astronomic tide for the region, to yield recurrence intervals of total water level. The 10-year storm surge elevation is 9.67 feet, and the 50-year surge elevation is 10.9 feet. These numbers, when cross-examined with the identified elevations on the Base, indicate that flooding problems can be quite frequent toward the southern end of the Base.

Portions of the existing piers are located in Flood Zone V7, which is a Special Flood Hazard Area along the coast that is inundated by the 100-year flood and has velocity hazards associated with waves of 3-foot amplitude or greater (FEMA 1986). Flood Zone V7 is

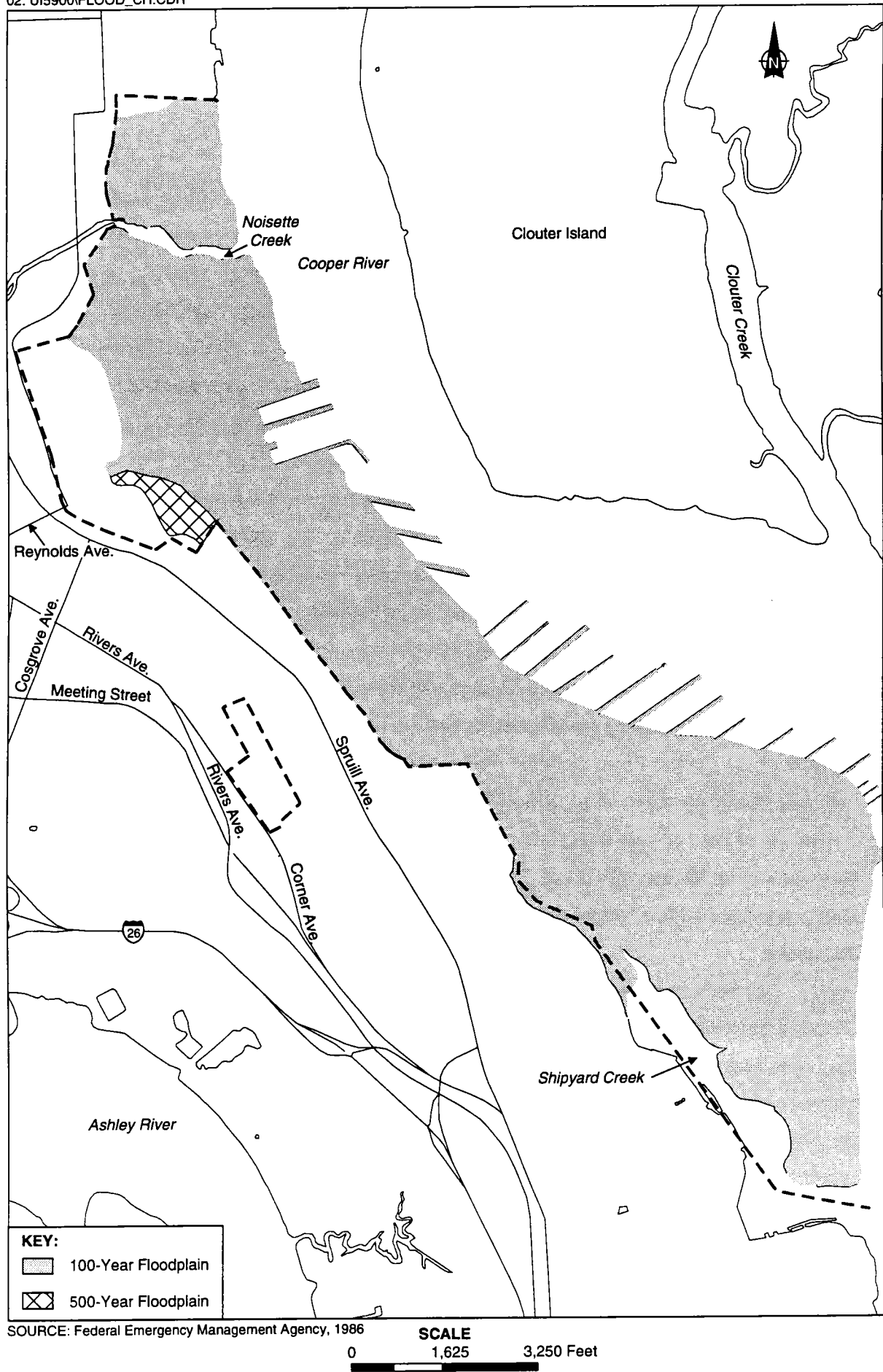


Figure 3-8 FLOODPLAINS AT THE CHARLESTON NAVAL BASE

located between 300 and 375 feet into the Cooper River from land and has a base flood elevation of 14 feet NGVD (FEMA 1986).

3.4 Water Quality and Hydrology

3.4.1 Surface Water Hydrology

The Charleston Naval Base is situated on the Cooper River, approximately 5 kilometers (km) above its confluence with the Charleston Harbor. The harbor, encompassing 65 square kilometers (km²), forms one of the largest estuarine systems in South Carolina as a result of inland fresh waters encountering marine salt water. In addition to receiving flow from the Cooper River, the harbor also receives considerable flow from the Wando and Ashley rivers. The entire harbor basin drains 41,000 km².

In the vicinity of the Base, two small tidal creeks flow into the Cooper River. Noisette Creek is a small tidal drainage near the northern edge of the property. Shipyard Creek is a larger tidal creek that bounds the Base to the south. A shipping channel is maintained by USACE in the downstream portion of the creek. Although its shores are undeveloped along the Base, Shipyard Creek is used by several industrial operations along its southern shores.

Hydrology in the vicinity of the Base is tidally influenced. Tides in the Charleston Harbor are semidiurnal, with two nearly equal high and low water levels occurring each tidal day. The mean tidal range at the Base is approximately 1.6 meters, with spring tidal range up to 1.9 meters. The harbor estuary is formed as the outflowing fresh water from the three primary rivers joins the inflowing salt water from the Atlantic Ocean (South Carolina Sea Grant Consortium 1992). Because of the close proximity to the Charleston Harbor, the salinity regime of the Cooper River at the Base is primarily polyhaline, with salinity concentrations between approximately 20 and 34 parts per thousand (ppt). Water salinities approach the mesohaline range (approximately 6 to 20 ppt) during the mean annual low tide. Because of the inflow of fresh water from the Cooper River, and the different densities of fresh water and salt water, salinity stratification occurs within the river, with fresh water or less saline waters overlaying more saline waters. Stratification adjacent to the Base can create a salinity variation of 3 to 5 ppt between surface and bottom waters (Van Dolah *et al*, 1990).

The inflow of fresh water into the harbor from the Cooper River has changed dramatically as a result of recent water-diversion projects developed by USACE. Prior to 1940, the inflow to the harbor from the Cooper River was approximately 11.8 cubic meters per second (m³/sec.). Upstream diversions of the Santee River to the Cooper River raised the

total outflow to 455 m³/sec., greatly increasing the fresh water flow into the estuary and creating a partially mixed salinity regime. Average salinity levels in the vicinity of the Base had been reduced to 10.4 ppt. Recent rediversions, completed in 1988, have reduced the Cooper River inflow to 122 m³/sec. (Van Dolah *et al.* 1989). Following rediversion, average salinity levels increased to nearly 23 ppt. One of the primary reasons for rediverting flow away from the Cooper River was to eliminate the sedimentation in the Cooper River. This issue is discussed further in Section 3.4.3.

Because of tidal flow in the estuary, stream depths are variable. Shipping channels are maintained by dredging both the Cooper River and lower Shipyard Creek. Project depths in the Cooper River are maintained by USACE at approximately 42 feet. The maintained channel depth in Shipyard Creek is approximately 30 feet. In addition, the Navy conducts yearly maintenance dredging in the vicinity of its berthing facilities to maintain project depths varying from 35 feet to 15 feet in depth at low tide (Droze 1994).

Surface water flows on the Base are derived entirely from storm water runoff. Runoff is collected and conducted through a storm water drainage system to either the Cooper River or one of the adjacent tidal creeks. Some runoff is retained in on-base wetlands and the dredged spoil disposal area.

3.4.2 Water Quality

As discussed in the previous section, the waters of the Cooper River and its tidal creeks range from salt water to brackish. Unlike fresh water sources, these waters are not classified for potability. Saltwater classifications are broken down into three classifications:

- Class SB waters - tidal salt water suitable for secondary contact recreation, crabbing, fishing (except harvesting of clams, mussels, or oysters for market purposes or human consumption), and the survival and propagation of a balanced indigenous aquatic community or marine fauna and flora;
- Class SA waters - tidal salt waters suitable for primary contact recreation - also suitable for uses listed in Class SB; and
- Shellfish Harvesting Waters (SFH) - tidal salt waters suitable for harvesting of clams, mussels, or oysters for market purposes or human consumption, and suitable for uses listed in Class SA and Class SB.

Waters in the Cooper River and the tidal creeks are classified as SB waters. Shellfish harvesting is prohibited in the Cooper River, not because of the known occurrence of

degradation, but rather for the potential of variability of water quality (SCDHEC 1992a). The entire Cooper River estuary is identified as meeting its use designation. Occasional substandard dissolved oxygen (DO) measurements have been noted in the later summer months. State water quality standards require that a minimum DO level of 4.0 milligrams per liter (mg/L) be maintained. Typical DO levels in the Cooper River are around 7.0 mg/L. Levels can drop to around 5.0 mg/L in August and September, with occasional readings below 4.0 mg/L (SCDHEC 1992b).

The Charleston Naval Base has multiple permitted discharges, either directly to the Cooper River, or to one of the tidal creeks. These discharges fall under National Pollution Discharge Elimination System (NPDES) jurisdiction, and are permitted to convey only storm water runoff off site from various facilities on site. Approximately 80% of storm water discharges directly into the Cooper River.

The industrial discharges originating on the Base were redirected to a municipal wastewater treatment plant in the early 1970s. These discharges to the wastewater treatment plant have also been permitted under NPDES regulations. Although the existing NPDES permit for industrial discharges has expired, SCDHEC has authorized interim use of the existing permit until a new permit is reissued. Although the Navy has endeavored to divert all industrial and other effluents other than storm water to wastewater treatment facilities, it is suspected that some wastewaters are being discharged via the storm water system (U.S. Department of the Navy 1994). Because of the antiquity of the sewer system, the potential exists for several on-base industrial sources to discharge wastewater to the Cooper River, although no studies have confirmed this possibility (U.S. Department of the Navy 1994). However, no water quality problems within the Cooper River stemming from sources on the Base have been identified during state water quality surveys. According to SCDHEC (1992b) the area of the Cooper River adjacent to the Base attains its use designation.

The Base Realignment and Closure (BRAC) Cleanup Team (BCT) is currently pursuing an investigation of potential industrial discharge sources for the purposes of ensuring that all industrial discharges comply fully with the NPDES permit requirements. The BCT is composed of representatives of the Southern Division of the Naval Facilities Engineering Command, Charleston Naval Shipyard, South Carolina Department of Health and Environmental Control (SCDHEC), and EPA.

Agency concerns have been raised about the overall quality and assimilative capacity of the Cooper River, especially following the redirection of considerable flow back to the Santee River, because of the potential cumulative effect of existing discharges to the river (ERC 1993). Most of the permitted discharges to the Cooper River are from private

industries, not from the Naval Base. Storm water runoff, which is the primary discharge from the Base, has little impact on the total assimilative capacity of the Cooper River. However, if nonidentified industrial sources from the Naval Base are being discharged into the storm water system, rather than being discharged to wastewater treatment facilities, the Base could be a more significant source contributing to cumulative effects on water quality.

Because of the industrial activities that are conducted daily at the Base, a potential does exist for a spill into the adjacent waterways. No serious spills were identified by either Navy sources or state agencies (SCDHEC 1992b).

3.4.3 Sediment Quality

Diversion of the Santee River into the Cooper River created a sedimentation problem in the Cooper River. A primary reason for the redirection was to reduce the sediment load in the Cooper River. In order to maintain the shipping channels within the Cooper River, extensive dredging has been necessary. Prior to redirection, the shoaling within the shipping channel that was occurring adjacent to the Naval facilities required yearly dredging of 530,000 cubic yards of sediment. Following redirection, this dredging was reduced to 47,000 cubic yards. Additionally, the naval berthing piers act as jetties that tend to create backwater areas that can collect sediment. These areas also are maintained through dredging on a continual basis. Naval slips and docks required dredging of 2,800,000 cubic yards prior to redirection. Following redirection, this amount was reduced to 1,226,000 cubic yards. This may not be entirely reflective of the redirection because Navy dredging activities have been scaled back to the level of effort absolutely necessary (Droze 1994). Dredged material resulting from Navy activity has been disposed of on the Navy-owned portions of Clouter Island.

Minimal contaminant data is available for either *in situ* Cooper River sediment or the dredged spoil material. Although USACE, which is responsible for maintaining the shipping channel in the Cooper River, currently analyzes the discharged spoil for priority pollutants, these analyses have only recently been undertaken and, as a result, limited data are available. No significant elevated levels of contamination have been identified (USACE 1994). However, the historical discharge of industrial effluents to the Cooper River, both from the Naval Base and adjacent industrial areas, and the presence of several AOCs and SWMUs within or near the Cooper River and Shipyard Creek (see Figure 3-17) represent long-term sources of potential sediment contaminants. Introduction of industrial effluents and contaminated soils, groundwater, and surface waters from hazardous materials sites into the Cooper River or Shipyard Creek would likely cause chronic sediment contamination in the vicinity of

the Naval Base. However, the continuous cycle of sedimentation and subsequent dredging of the Cooper River and Shipyard Creek would tend to prevent the long-term accumulation of these contaminants in surface sediment layers.

3.4.4 Groundwater

Groundwater supplies in the project vicinity are generally obtained from shallow aquifers and the Santee Limestone and Black Mingo formations.

The shallow aquifers consist of discontinuous layers of sand, clay, and occasional beds of shell and limestone. Generally, the thickness of the aquifers is less than 30 feet, although some areas can extend to 65 feet of thickness. Wells tapping into these aquifers are commonly used for irrigation or industrial supply, and only rarely for potable water supplies (Hockingsmith 1994).

The more abundant potable water supplies in the region are provided by the Santee Limestone and Black Mingo formations. These formations underlie the Cooper Marl, which acts as a confining layer, resulting in artesian conditions throughout most of the formations. Although the Santee formation is capable of producing sufficient yields to satisfy domestic requirements, the majority of wells tapping this limestone extend deeper to reach the uppermost sand beds of the Black Mingo formation, augmenting well yields. Wells in the region range from 200 to 500 feet in depth and produce 100 to 300 gallons per minute (gpm) (SC Water Resources Commission 1985).

Groundwater flow in this region is generally to the southeast. However, localized conditions, such as topography, transmissivity differences, and pumpage may affect groundwater flow (SCWRC 1985). According to a 1989 study conducted by Soils Consultants, Inc., borings installed in the southern part of the Base encountered the groundwater table at depths of 0.5 to 3.5 feet below ground surface (BGS).

3.5 Topography, Geology, and Soils

Charleston is located in the southern part of the Atlantic Coastal Plain, a physiographic area characterized by meandering rivers, wetlands, and low-lying peninsulas and islands. Most of the land in the Coastal Plain is between 0 and 40 feet above mean sea level (MSL), although some areas to the north may reach 100 feet above MSL. The physiography of the area has been altered by ongoing dredging activity in the Cooper River and by dam construction on the Back River.

The geology of the Charleston region is characterized by a series of Pleistocene and recent surficial beach ridge sediments. At Charleston Naval Base, recent and Pleistocene sands, silts, and clays exposed at the surface have been substantially reworked and/or covered with dredge/spoil and are underlain by the Cooper Marl, a brownish green, calcareous, massive clay unit with good load-bearing capacity. The depth to the Cooper Marl varies across the Base. The results from a 1989 foundation study performed at the southeast end of the property (Soil Consultants, Inc., 1989) indicate that the top of the Cooper Marl occurs at 50 to 60 feet BGS in that area. The middle Eocene Santee Limestone underlies the Cooper Marl, extending downward approximately 250 feet below the marl.

The original surface soils of the Charleston Naval Base property were fine-grained tidal marsh materials. These have been extensively disturbed by construction activities on the property and by the deposition of dredge material on the southern end of the property. The spoil is a generally unsorted mixture of sands, silts, and clays. According to the 1989 study performed by Soils Consultants, Inc., borings at the southern end of the property encountered up to 60 feet of very soft organic clay overlying the Cooper Marl. In each of eight borings installed as part of that study, the groundwater table was encountered at depths of 0.5 to 3.5 feet BGS.

3.6 Climate and Air Quality

3.6.1 Regional Climate and Meteorology

Charleston Naval Base is located in Charleston County, South Carolina. Continental air masses from the west in this area are moderated by mixing with marine air masses from the Atlantic Ocean. Summers are warm, and winters are relatively mild. Relative humidity is fairly high in the area because of the influence of the Atlantic Ocean. The ocean also plays a part in the area's severest weather, which comes in the form of violent thunderstorms, tornadoes, and hurricanes. Most tornadoes occur from March through June with April being the peak month. Tropical storms or hurricanes occasionally affect the area (NOAA 1985).

Meteorological data based on a 30-year record from 1951 to 1980 from the National Oceanic and Atmospheric Administration (NOAA 1985) show that the annual average daily maximum and minimum temperatures on a monthly basis are 75.3°F and 54.2°F, respectively. The extreme maximum measured temperature is 103°F (June), and the extreme minimum is 8°F (December). July is the warmest month on average (80.5°F) and January is the coldest month on average (47.9°F) (NOAA 1985).

The average annual precipitation is 51.59 inches. The highest precipitation occurs during the months of March through September. The maximum amount of rain in 24 hours was 9.4 inches in June 1973 (Department of Commerce [DOC 1992]). Snowfall is very rare.

The average annual wind speed is 8 knots. Maximum wind gust reaches 85 knots. Annual mean wind direction is from the north-northeast, though during the period from March through August, the prevailing wind direction is south-southwest (DOC 1992).

3.6.2 Existing Air Quality

The Clean Air Act (CAA) of 1970, 42 USC 7401, *et seq.*, amended in 1977 and 1990, is the basic federal statute governing air pollution. Under the CAA, National Ambient Air Quality Standards (NAAQSs) have been set for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), sulfur dioxide (SO₂), and lead (Pb). These are known as criteria pollutants. The primary standards are intended to protect public health, whereas the secondary standards are intended to protect the nation's general welfare.

SCDHEC has adopted the NAAQS for criteria pollutants and has its own standards for total suspended particulates (TSP) and gaseous fluorides (as hydrogen fluoride), promulgated in SCDHEC Regulation No.62.5 (SCDHEC 1992). The standards are shown in Table 3-2.

In addition to these regulations, federal actions are required to conform with applicable State Implementation Plans (SIPs) developed in response to the CAA as amended in 1990. The criteria and procedures for demonstrating conformity in nonattainment areas are explained in the General Conformity Final Rule (40 CFR Parts 6, 51, and 93). At this time, the General Conformity Rule does not apply in attainment areas.

According to EPA guidelines, an area with air quality better than the NAAQS for a specific pollutant is designated as being in attainment for that pollutant. Any area not meeting the NAAQS is classified as nonattainment. When there is a lack of data for the EPA to define an area, the area is designated unclassified and is treated as an attainment area until proven otherwise.

Ambient air pollutant concentrations near the Base are measured by SCDHEC in the Charleston Air Quality Control Region (AQCR) to monitor compliance with national and local air quality standards. SCDHEC operates several ambient air monitoring stations within the vicinity of the Base (including Charleston and Berkeley counties). These counties are located within EPA Charleston Intrastate AQCR 199, which also includes Dorchester County. Table 3-3 shows the most recent ambient air quality data for stations in the Charleston AQCR.

Table 3-2		
SUMMARY OF STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS		
Pollutant	Measuring Interval	Primary Standard
Federal^a		
Carbon monoxide (CO)	8 hour maximum	10 mg/m ³ (9 ppm)
	1 hour maximum	40 mg/m ³ (35 ppm)
Lead (Pb)	Maximum arithmetic mean per calendar quarter	1.5 µg/m ³
Nitrogen dioxide (NO ₂)	Annual arithmetic mean	100 µg/m ³ (0.05 ppm)
Ozone	1 hour maximum	235 µg/m ³ (0.12 ppm)
Particulates (PM-10)	Annual arithmetic mean	50 µg/m ³
	24 hour maximum	150 µg/m ³
Sulfur dioxide	Annual arithmetic mean	80 µg/m ³ (0.03 ppm)
	24 hour maximum	365 µg/m ³ (0.14 ppm)
State		
Total suspended particulates (TSP)	Annual geometric mean	75 µg/m ³
Gaseous fluorides (as HF)	12 hour average	3.7 µg/m ³
	24 hour average	2.9 µg/m ³
	1 week average	1.6 µg/m ³
	1 month average	0.8 µg/m ³

^a South Carolina has adopted the Federal NAAQS.

Key:

µg/m³ = Micrograms per cubic meter of air.
 mg/m³ = milligrams per cubic meter of air.
 ppm = parts per million parts of air by volume.

Sources: 40 CFR 50; South Carolina Department of Health and Environmental Control 1992.

Table 3-3

MEASURED AMBIENT AIR CONCENTRATIONS IN THE CHARLESTON AQCR (199)

Monitoring Site	TSP Ann. Geom Mean ($\mu\text{g}/\text{m}^3$)	PM ₁₀ 24-hr Max. ($\mu\text{g}/\text{m}^3$)	PM ₁₀ Ann. Arith. Mean ($\mu\text{g}/\text{m}^3$)	NO ₂ Ann. Arith. Mean (ppm)	O ₃ 1-hr Max. (ppm)	SO ₂ Max. 24-hr ($\mu\text{g}/\text{m}^3$)	SO ₂ Ann. Arith. Mean ($\mu\text{g}/\text{m}^3$)	CO Max. 8-hr. (ppm)	CO Max. 1-hr. (ppm)	Pb Calendar Quarterly ($\mu\text{g}/\text{m}^3$)
County Health Dept.	53	NA	NA	NA	NA	NA	NA	NA	NA	0.031
Jenkins St. Fire Sta.	35	74	25	0.012	NA	98	14	NA	NA	0.01
Fire Sta. #2	31	NA	NA	NA	NA	NA	NA	NA	NA	NA
C. Romain Moore's Landing	24	61	20	0.003	0.088	21	3	NA	NA	NA
U.S. Navy Base II	35	82	25	NA	NA	NA	NA	NA	NA	NA
Greenleaf St.	35	75	23	NA	NA	NA	NA	NA	NA	0.023
Ashe St.	NA	NA	NA	NA	NA	NA	NA	5.3	13.0	NA
Army Reserve	NA	NA	NA	NA	0.098	NA	NA	NA	NA	NA
Bushy Park Ind.	NA	NA	NA	NA	0.099	NA	NA	NA	NA	NA

Key:

NA = Not available.

Source: South Carolina Department of Health and Environmental Control 1992.

All counties in AQCR 199 are classified as attainment or unclassifiable/attainment for all criteria pollutants except for parts of Charleston County within the section of the city of Charleston. These areas do not meet secondary standards for total suspended particulates TSP (BNA 1994).

Stationary Sources

The most recent air emissions data for the Base were obtained from the Air Emissions Compliance Audit (ESE 1992). This audit identified 246 stationary sources of air pollution. These sources can be divided into the following categories:

1. Fuel-burning equipment, which includes boilers and small furnaces. The major air pollutants emitted from these sources are SO₂, nitrogen oxide (NO_x), PM and CO. Minor emissions include volatile organic compounds (VOCs), metals, hydrogen chloride, and some hazardous air pollutants (HAPs). The incinerator currently operating at the Base is a classified paper waste incinerator. Primary emissions from this incinerator include NO_x, SO₂, PM, CO, and hydrogen chloride.
2. Internal combustion engines, including stationary diesel/gasoline engines and standby generators. The major pollutants emitted include NO_x, SO₂, PM, and CO.
3. Surface coating operations, including paint spray booths and open painting of ships at dry dock facilities. Substantial amounts of PM and VOCs are emitted from these sources.
4. Storage tanks/fueling operations. The major pollutants emitted are VOCs.
5. Solvent-use operations, degreasing, cleaning and coating of storage tanks, printing shops, resin and adhesive use and paint stripping. The major pollutants emitted are VOCs.
6. Other base operations with significant air emissions are woodworking and electroplating.

The hazardous air pollutants (HAPs) being emitted at the Base (associated mainly with incineration, surface coating, electroplating, and solvent use operations) include 1,1,1-trichloroethane, trichloroethylene, ethylene glycol, methylene chloride, methylethyl ketone, methyl isobutyl ketone, toluene, xylene, zinc chromate, methylethyl ketone peroxide, hydrogen chloride, ethylene oxide, and chromic acid mist (ESE 1992).

A summary of actual annual stationary source air emissions from all on-base facilities is presented in Table 3-4. In order to describe the baseline (current operating) emissions

Table 3-4							
SUMMARY OF CHARLESTON NAVAL BASE ACTUAL STATIONARY SOURCE AIR EMISSIONS							
	Activity	Actual Emissions (tpy)					
		NO _x	SO ₂	CO	PM	VOC	HAP
Fuel Burning Equipment	NS	4.31	11.88	0.88	0.52	0.09	NE
	NSY	110.07	260.16	42.48	14.14	1.16	NE
	NSC	1.66	0.12	0.34	0.07	0.09	NE
	FMWTC	0.08	0.16	0.02	0.01	0.00	NE
	SUBTRAFAC	1.02	4.97	0.09	0.19	0.01	NE
Internal Combustion Engines	NS	0.24	0.02	0.06	0.02	0.01	NE
	NSY	24.34	0.78	6.62	2.23	1.26	NE
	NSC	1.05	0.09	0.27	0.10	0.03	NE
	SUBTRAFAC	0.42	0.03	0.11	0.04	0.01	NE
Surface Coating Operations	NS	N/A	N/A	N/A	0.01	4.69	2.12
	NSY	N/A	N/A	N/A	40.42	97.03	40.15
Storage Tanks and Fueling Operations	NS	N/A	N/A	N/A	N/A	14.46	NE
	NSY	N/A	N/A	N/A	N/A	5.69	NE
	SUBTRAFAC	N/A	N/A	N/A	N/A	0.008	NE
Solvent Use Operations	NS	N/A	N/A	N/A	N/A	0.64	0.56
	NSY	N/A	N/A	N/A	N/A	9.16	2.68
Miscellaneous Operations	NS	0.13	0.05	0.10	0.05	NE	0.18
	NSY	N/A	N/A	N/A	54.47	NE	NE
Total Naval Base		143.3	278.2	51	112.2	134.3	45.7
Charleston County ^a		6,638.5	9,382.4	5,761.6	1,492.8	2,442.8	N/A
Berkeley County ^a		27,498.8	57,548.9	10,797.2	1,690.9	5,625.9	N/A
Charleston AQCR ^a		38,172.9	73,200.7	17,614.4	3,588.3	8,187.1	N/A

^a Does not include mobile source emissions (SCDHEC 1992).

Key:

FMWTC = Fleet and Mine Warfare Training Center.
 N/A = Not Applicable.
 NE = Negligible.
 NS = Charleston Naval Station.
 NSC = Naval Supply Center.
 NSY = Charleston Naval Shipyard.
 SUBTRAFAC = Submarine Training Facility.
 tpy = tons per year.

Source: Environmental Science & Engineering, Inc. 1992.

generated at the Base, annual stationary source emissions for Charleston County, Berkeley County and the Charleston AQCR for the period 1991 to 1992, based on information provided by SCDHEC, are also shown in Table 3-4. Actual emissions are based on actual hourly emission rates and hours of operation (ESE 1992). Annually, total stationary source emissions from the Base of each criteria pollutant (NO_x , SO_2 , and PM) and VOCs exceeds 100 tons per year (tpy). Actual annual total stationary source emissions of HAPs are greater than 25 tpy.

The Base has been designated as a Class A1 (p) air pollutant source by SCDHEC. The definition includes stationary sources whose potential emissions are equal to or exceed 100 tons per year of any pollutants regulated under the CAA. The purpose of defining a list of Class A sources is to focus the state's priorities for compliance monitoring and enforcement activities on those larger facilities that likely will impact air pollution more frequently than smaller facilities.

The Navy has a permit to operate air pollution sources (Permit Number 0560-0002, issued March 8, 1989) on file with the state. The permit expired August 31, 1993, but has been extended to allow continued operation until base closure. The permit authorizes the operation of 34 boilers with heat inputs ranging from 1.67×10^6 to 88.7×10^6 British Thermal Units (BTUs) per hour, two incinerators, five diesel-powered emergency generators, and scrubbers (U.S. Department of the Navy 1994). Currently, fuel-burning equipment and backup generators are in compliance with applicable air pollution regulations (ESE 1992). Because the Base closure schedule extends beyond the due date for Title V operating permit applications, the Navy has taken steps to comply with this program. The Navy will apply as a synthetic minor source, which means that federally enforceable control measures will be implemented such that emissions will be reduced below the Title V trigger levels. This will avoid the need for a Title V permit. The ownership transfer following closure will require that any existing permits be modified to indicate the new ownership.

Mobile Sources

Mobile sources at the Base consist of personally owned vehicles (POVs) used for commuting to and from the site, vehicles used for maintenance and site operations, light trucks and oversized vans, heavy trucks, marine vessels, and locomotives. Exhaust and crankcase emissions from these vehicle types include CO, PM, NO_x , SO_2 , and VOCs. Once released, NO_x and VOCs react to produce O_3 .

Currently, the Base generates average daily traffic (ADT) of 44,500 vehicles on weekdays and 66,000 vehicles on weekends (BEST 1994). There are no data available on the

Table 3-5

**ESTIMATED POV ANNUAL VEHICLE MILES TRAVELED FOR ROUND-TRIP WORK COMMUTE TO
THE NAVAL BASE (BASELINE)**

Place of Residence	Distance to Base Miles (Round Trip)	Trip Distribution % Total POVs	24-Hour Two-Way Volume (Weekdays)	24-Hour Two-way Volume (Weekends)	Daily Miles Traveled (Weekdays)	Daily Miles Traveled (Weekends)	Annual Miles Traveled (Weekdays)	Annual Miles Traveled (Weekends)	Annual Miles Traveled (Total)
Goose Creek/Summerville	16	39.7	16,452	24,987	131,613	199,897	32,903,360	22,988,206	55,891,566
North Charleston	6	24	9,946	15,106	29,837	45,317	7,459,200	5,211,432	12,670,632
St. Andrews	8	11.7	4,848	7,364	19,394	29,456	4,848,480	3,387,431	8,235,911
Charleston	4	2.3	953	1,448	1,906	2,895	476,560	332,952	809,512
James Island	12	4.7	1,948	2,958	11,686	17,749	2,921,520	2,041,144	4,962,644
Downtown	4	0.8	332	504	663	1,007	165,760	115,809	281,569
Mount Pleasant	12	4.3	1,782	2,706	10,692	16,239	2,672,880	1,867,430	4,540,310
Naval Base	2	12.3	5,097	7,742	5,097	7,742	1,274,280	890,286	2,164,566
Total		100	41,357	62,814	210,888	320,302	52,722,040	36,834,691	89,556,731

Key:

POV = Personally owned vehicle

truck traffic for existing conditions. For the purposes of this analysis, it was assumed that the same number of trucks are used as in Phase I of Development Concept 3: 2,604 heavy trucks and 456 light trucks and oversized vans (BEST 1994). The Navy also operates a 15-passenger, on-base shuttle for military personnel.

Annual vehicle miles traveled (VMT) for POVs were estimated using employee place-of-residence data, distances to the Base, and regional trip-distribution data (U.S. Navy Complex Traffic Management Plan 1992). Annual VMT estimates are shown in Table 3-5. Because no current statistical data are available regarding truck trip distribution, it was assumed that trucks each travel approximately 3 miles daily on the site. Annual emissions were calculated based on this distance. Mobile source emission factors from a MOBILE 5A model run are presented in Table 3-6. The model run was performed using default settings in

Table 3-6 AIR POLLUTANT EMISSION FACTORS USED FOR LDGVs, LDGTs, AND HDDVs		
Vehicle Type	Pollutant	Average Emission Factor (g/mile)
Light Duty Gasoline Vehicles (LDGV)	VOC	2.49
	NO _x	1.66
	CO	21.79
Light Duty Gasoline Trucks (LDGT)	VOC	3.46
	NO _x	2.01
	CO	30.54
Heavy Duty Diesel Vehicles (HDDV)	VOC	2.52
	NO _x	15.10
	CO	12.24

MOBILE 5A. Estimated annual air emissions produced by the Base-generated traffic are summarized in Table 3-7.

A primary air quality concern associated with the traffic is the potential of CO "hot spots" along roadways near congested intersections. It is these areas where the 1 hour CO National Ambient Air Quality Standards (NAAQS) could be exceeded. Detailed traffic data are not available to perform CO hot-spot modeling for intersections near the Base. Qualitatively, however, the potential CO hot spots can be in part identified by Level-of-Service (LOS) (USEPA 1992). An LOS is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, and safety (Transportation Research Board 1985). LOSs range from "A," which corresponds to no

Table 3-7				
ESTIMATED ANNUAL EMISSIONS OF THE BASE-GENERATED TRAFFIC (BASELINE)				
Vehicle Type	Estimated Annual Vehicle Miles Traveled	Estimated Annual Emissions (TPY)		
		VOC	NO _x	CO
POVs	89,556,731	245.86	163.91	2,151.53
LDGT and LDGV	639,480	2.43	1.42	21.33
HDDV	2,851,380	7.92	47.47	38.48
Total		256.22	212.80	2,211.55

traffic delays, to "F," which corresponds to worst-case conditions. Intersections with LOSs D, E, or F have the potential to develop CO "hot spots" (USEPA 1992). Currently, the following intersections in the vicinity of the Base have the potential to be CO "hot spots" based on their LOS (as described in Section 4.8): Burton/Viaduct Road, from Spruill Avenue to the Viaduct Avenue Gate; US52/Rivers Avenue, from Durant Avenue to Mall Drive; US26, from US17 to Spruill Avenue; US26, from SC7/Cosgrove Avenue to the Mark Clark Expressway, including intersections with Dorchester and Montague Avenues; and US26, from Remount Avenue to the US52 Connector. The intersections of Hobson Avenue/Viaduct Road, Hobson Avenue/Holland Street, and Hobson Avenue/Halsey Street are also potential for existing CO "hot spots" (U.S. Department of the Navy 1994).

Emissions from marine vessels and diesel locomotives include NO_x, CO, SO₂, PM10, and VOCs. Activity levels of marine vessels related to the Base and estimated annual emissions are presented in Table 3-8.

Closure Baseline

Base closure will result in a reduction of emissions because all active emission sources will be shut down or the processes producing emissions will be operated at less than full capacity (see Table 3-8). These emission levels are assumed to exist until the reuse of the Base is sufficiently underway.

The emission inventory for the Base at closure was estimated by assuming that all emissions other than those associated with building heating and power production would be eliminated. Boilers and standby power generators are assumed to operate at 30% of the

Table 3-8						
ESTIMATED ANNUAL EMISSIONS FROM MARINE VESSELS RELATED TO NAVAL BASE						
Ship Type	Number of Trips	Estimated Annual Emissions (Tons per Year)				
		NO _x	CO	VOC	SO ₂	PM
DD	58	12.4	4.7	0.4	5.5	0.5
FFG	168	18.6	7.3	0.6	8.7	0.7
AE	15	0.6	0.1	<0.1	1.2	0.3
MCM	3	<0.1	0.1	0.1	<0.1	<0.1
AS	9	0.4	<0.1	<0.1	0.7	0.2
ARS	20	1.6	0.2	0.2	0.2	<0.1
Total		33.6	12.4	1.4	16.4	1.8

Key:

AE = Ammunition Ship
 ARS = Submarine Rescue
 AS = Submarine Tender
 CO = Carbon monoxide.
 DD = Destroyer
 FFG = Frigate
 MCM = Mine Countermeasures
 NO_x = Nitrogen oxides.
 PM = Particulate matter.
 SO₂ = Sulfur dioxide.
 VOC = Volatile organic compounds.

preclosure capacity in order to fulfill minimum building heating and power requirements.

These emissions are presented in the Table 3-9.

Table 3-9					
ESTIMATED ANNUAL EMISSIONS FOR THE NAVAL BASE CLOSURE BASELINE					
Emission Type	Estimated Annual Emissions (TPY)				
	NO _x	SO ₂	CO	PM	VOC
Stationary Sources	43	83	15	5.4	0.8

Summary

Table 3-10 shows a summary of the total emissions for the existing active operation of the Base and emissions expected after base closure prior to development of any reuse

Table 3-10						
EXISTING CONDITION AIR POLLUTANT EMISSION SUMMARY						
Source Type	Emissions (TPY)					
	NO _x	SO ₂	CO	PM	VOC	HAP
Current Operating						
Stationary	143	278	51	112	134	46
Mobile	247	16	2,224	2	257	—
Total	390	294	2,275	114	391	46
Closure						
Stationary	43	83	15	5.4	0.8	—

Key:

CO = Carbon monoxide.
 HAP = Hazardous air pollutant.
 NO_x = Oxides of nitrogen.
 PM = Particulate matter.
 SO₂ = Sulfur dioxide.
 TPY = Tons per year.
 VOC = Volatile organic compound.

alternatives. Existing active operation of the Base contributes a small percentage of the total stationary source emissions into the Charleston AQCR air basin. For NO_x, SO₂, and CO, the Base contributes less than 5% of the total stationary source emissions and between 5% and 10% of the PM and VOC stationary source emissions to the air basin.

Mobile sources (mainly POV use) contribute significantly to the NO_x, CO, and VOC emissions into the air basin. The SCDHEC does not maintain data on the magnitude of mobile source emissions into the entire Charleston AQCR; therefore, no estimate of the percentage contribution of the Base-related traffic can be made.

Base closure will significantly reduce emissions of all pollutants. The pollutants NO_x and SO₂ will still be emitted as a result of continued operation of boilers and standby generators but at a reduced capacity. Substantial emission reductions in HAPs, VOCs, and

PM will occur as a result of the cessation of ship maintenance activities. Reduction in POVs will account for the substantial reduction in CO emissions.

3.7 Existing Noise Environment

Noise is defined as sound with an intensity greater than the ambient or background sound-pressure level (SPL). SPL is determined by measuring the noise emissions in terms of sound pressure in a relationship defined as a decibel (dB). The decibel scale commonly used in sound level measurements is the A-weighted decibel [dB(A)]. This scale is almost universally used to describe environmental noise because it simulates the variation of frequency throughout the audible range and the sensitivity to sound of typically healthy human hearing (Kryter 1970).

Outdoor noise levels change continually because of the temporal and spatial variations of sources. The temporal variation in the resulting sound levels is described by statistical levels in the form L_x , where L_x designates a sound that exceeds the level L for x percent of the sampling duration, or by equivalent sound levels in the form of L_{eq} , which represents the average sound-energy level produced as the actual sound level varies with time. The day-night sound level (DNL) is widely used by federal agencies, including the EPA, the Department of Housing and Urban Development, and the Department of Transportation (Federal Interagency Committee on Urban Noise 1980). DNL is calculated by taking the 24-hour equivalent level (L_{eq24}) and adding a 10-dB penalty to the actual sound level at night, from 10 p.m. to 7 a.m. (allowing for increased sensitivity to noise during sleeping hours).

3.7.1 Noise Criteria and Regulations

There are no federal or state regulations regarding environmental noise. However, there are various criteria or guidelines that have been established to prevent the negative effects of noise exposure. The EPA has published DNL values intended to "protect public health with a margin of safety" in its *Protective Noise Levels* document (1978). These values are shown in Table 3-11. The EPA has determined that annual average outdoor noise is sufficient to protect public health and welfare if it does not exceed 55 dB(A) in sensitive areas (EPA 1978). In addition, the EPA has determined that an individual's 24-hour noise exposure should not exceed 70 dB(A) in order to protect against hearing damage.

The Federal Interagency Committee on Urban Noise has published *Guidelines for Considering Noise in Land Use Planning and Control* (1980), which presents noise zone

<p align="center">Table 3-11</p> <p align="center">NOISE LEVELS THAT ADEQUATELY PROTECT PUBLIC HEALTH AND WELFARE</p>		
Impact	Noise Level	Area
Hearing loss	$L_{eq} (24) \leq 70 \text{ dB(A)}$	All areas
Outdoor activity interference and annoyance	$L_{dn} \leq 55 \text{ dB(A)}$	Outdoors in residential areas, farms, and other areas where people spend varying amounts of time, and in places in which quiet is a basis for use
	$L_{eq} (24) \leq 55 \text{ dB(A)}$	Outdoor areas where people spend limited amounts of time (e.g., school yards, playgrounds)

Key:

L_{eq} = Equivalent sound level.
 L_{dn} = Day-night sound level.
 dB(A) = A-weighted decibel.

Source: EPA 1978.

classifications and corresponding land use compatibility guidelines. From these guidelines, it can be determined whether a facility is compatible with a particular type of noise zone.

3.7.2 Baseline/Preclosure Noise Levels

Two instantaneous measurement noise surveys were performed by the Charleston Naval Hospital Industrial Hygiene Department on March 17 and October 7, 1992, with a hand-held noise meter. The March 1992 survey (U.S. Department of the Navy 1992a) entailed measuring sound levels at 11 locations on the perimeter of the Naval shipyard. The objective of this survey was to assess the impact of noise from machinery operating at the shipyard on the nearby residential areas. The noise levels measured at the shipyard perimeter ranged from 46 to 79 dB(A). The average noise level at the 11 perimeter locations was 56.6 dB(A). The primary noise source was reported as machinery within the shipyard and industrial portions of the Naval station. Other noise sources mentioned were railroad trains, fork-lift trucks, ventilation equipment, and construction equipment.

The October 7, 1992, survey (U.S. Department of the Navy 1992b) entailed measuring sound levels around the perimeter of the remainder of the Naval Base at 36 locations. Twenty-one of these locations were on the Cooper River approximately 500 yards

from the shoreline. Noise levels at these locations ranged from 50 to 68 dB(A). The average noise level at the 36 perimeter locations was 55.1 dB(A). The only noise source identified during this survey was vehicular traffic.

The average DNL for the Base perimeter can be calculated from the existing data using the following assumptions:

- The average of the values is representative of noise levels during work hours at the Base perimeter;
- 46 dB(A) (the lowest noise level measured) is representative of background at the sampling locations; and
- The hours of operation during which the noise sources at the Base operate correspond to a typical 8-hour workday.

DNL can be calculated using the following formula:

$$DNL = 10 \log 1/24[(7 \times 10^{L_{eq-bkgnd}/10}) + (8 \times 10^{L_{eq-wkshft}/10}) + (9 \times 10^{L_{eq-night} + 10/10})]$$

where:

$$L_{eq-bkgnd} = 46 \text{ dB(A)}$$

$$L_{eq-wkshft} = \text{logarithmic average of instantaneous measurements.}$$

$$L_{eq-night} = \text{background noise level} + 10 \text{ dB(A) penalty} = 56 \text{ dB(A).}$$

Using the above assumptions and equation, an average DNL of 56.9 at the perimeter of the CNSY is predicted. A DNL of 54.7 dB(A) is predicted for the perimeter of the remainder of the Base.

3.8 Transportation

3.8.1 Road Network

Regional Road Network

The Naval Base is close to major roadway networks in the coastal portion of South Carolina (see Figure 1-2). Major components of this network in the vicinity of the complex include (USGS 1958a):

- Interstate 26 (I-26), a limited-access highway providing direct access to downtown Charleston to the southeast; Columbia, South Carolina, to the northwest; and other interstate highways servicing the southeastern states;
- Interstate 526 (I-526/Mark Clark Expressway), a limited-access highway that provides direct access to outlying communities surrounding Charleston;
- U.S. Highway 52 (Rivers Avenue), a principal arterial road that provides local access on a route paralleling I-26, yet passes at grade through each predominantly developed area between Charleston and Cincinnati, Ohio; and
- U.S. Highway 17 (Savannah Highway), a principal arterial road that provides local access on a route paralleling the Atlantic coastline and passing at grade through each predominantly developed area between Maryland and Florida.

North Charleston Road Network

A roadway network of public rights-of-way provides access to the Charleston Naval Base. Six minor arterial roadways provide access to secured gates along the western boundary of the Naval Base. Beginning at the northern-most access road, the following roadways are used by vehicles to access the Base (see Figure 3-9): Virginia Avenue, Turnbull Avenue, McMillan Street, Cosgrove Avenue, Reynolds Avenue, and Viaduct Road.

Spruill Avenue, a minor arterial oriented north and south and located between Rivers Avenue and the western boundary of the Naval Base, connects the southern four access roads. Saint Johns and O'Hear avenues roughly parallel Spruill Avenue and connect the two northern access roads.

Virginia Avenue provides direct access from the Naval Base to the Mark Clark Expressway (I-526). Cosgrove Avenue provides direct access from the Naval Base to I-26. Vehicle traffic from any of the other Naval Base access gates must use multiple streets to reach interstate highways.

Charleston Naval Base Roadway Network

The northern-most gate at Virginia Avenue provides access to Avenue "D" North, a minor north-south arterial roadway within the Naval Base. Three of the remaining four gates in the northern portion of the complex—Turnbull Avenue, McMillan Avenue, and Reynolds Avenue—provide access to Hobson Avenue, a minor north-south arterial roadway. The remaining northern gate at Cosgrove Avenue provides access to the large parking lot serving the Naval shipyard. The southern gate at Viaduct Road provides access to Hobson Avenue

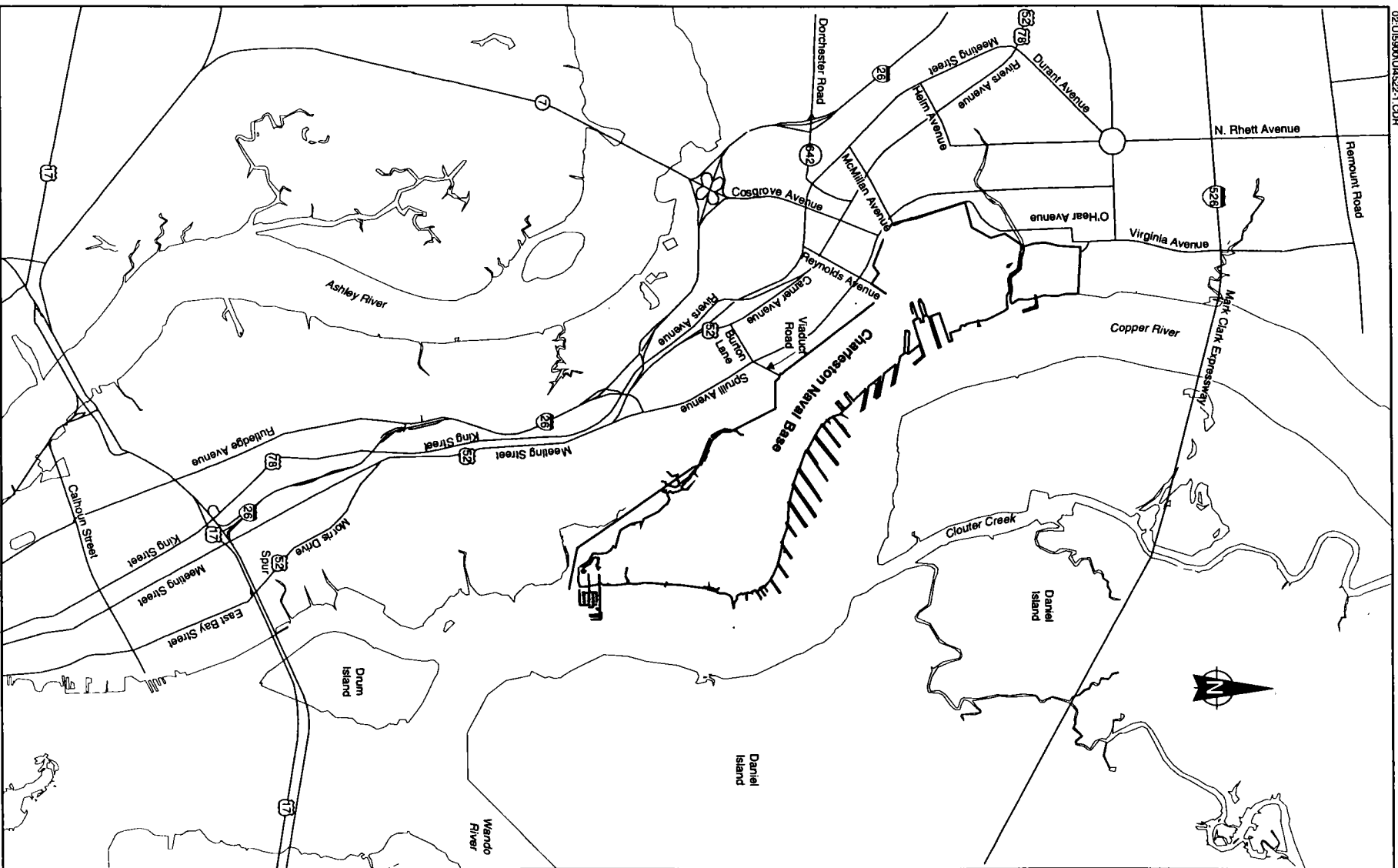


Figure 3-9 REGIONAL ROADWAY NETWORK

and serves as the truck access and inspection gate. A number of ancillary roads provide access from Avenue "D" North and Hobson Avenue to individual buildings, piers, and facilities (U.S. Department of the Navy 1994) (see Figure 3-10).

Existing Traffic Volumes

Traffic volumes on roadways in the vicinity of the Charleston Naval Base are presented in Table 3-12 for the years 1990, 1992, and 1993 (U.S. Department of the Navy 1992; SCDOT 1993, 1994). Traffic volumes are presented as annual average daily traffic (AADT). Except for the roadway segments on I-26 north of the Mark Clark Expressway, most roadway segments have experienced either no change or a decrease in vehicle traffic volume since 1990. This is especially true for the minor arterials providing direct access to the Naval Base. The cause of this decrease can be attributed to the gradual downsizing of Naval Base operations over the past four years.

In addition to annual average daily traffic volumes, the adequacy of a roadway network is characterized at an intersection in terms of its LOS (see Section 3.6.2 for an explanation of LOS). Table 3-13 presents LOSs for the year 1990 at major intersections surrounding the Naval Base (U.S. Department of the Navy 1992). Because of the decrease in traffic volumes since 1990 for the majority of roadway segments, it is expected that the current LOSs will show a decrease in traffic delays.

Annual VMT estimates are shown in Table 3-5 and are discussed in Section 3.6.2 of this FEIS.

Planned Road Improvements

A number of public roadway improvements are planned by the Charleston Area Transportation Study (CHATS) Transportation Improvement Program for fiscal years 1994 to 1998. These projects include new roadway construction, roadway widening, intersection improvements, pedestrian and bicycle pathway development, and public transportation vehicle fleet replacement. Total funding over the four-year period for transportation improvements is approximately \$133 million (CHATS 1994).

3.8.2 Marine Transportation

Water access to the Charleston Naval Base is provided by the Cooper River, which forms the eastern boundary of the Base. The Cooper River's centerline channel has a projected depth of 42 feet in the vicinity of the Base. The Base currently has 24 piers and

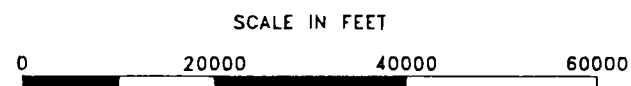
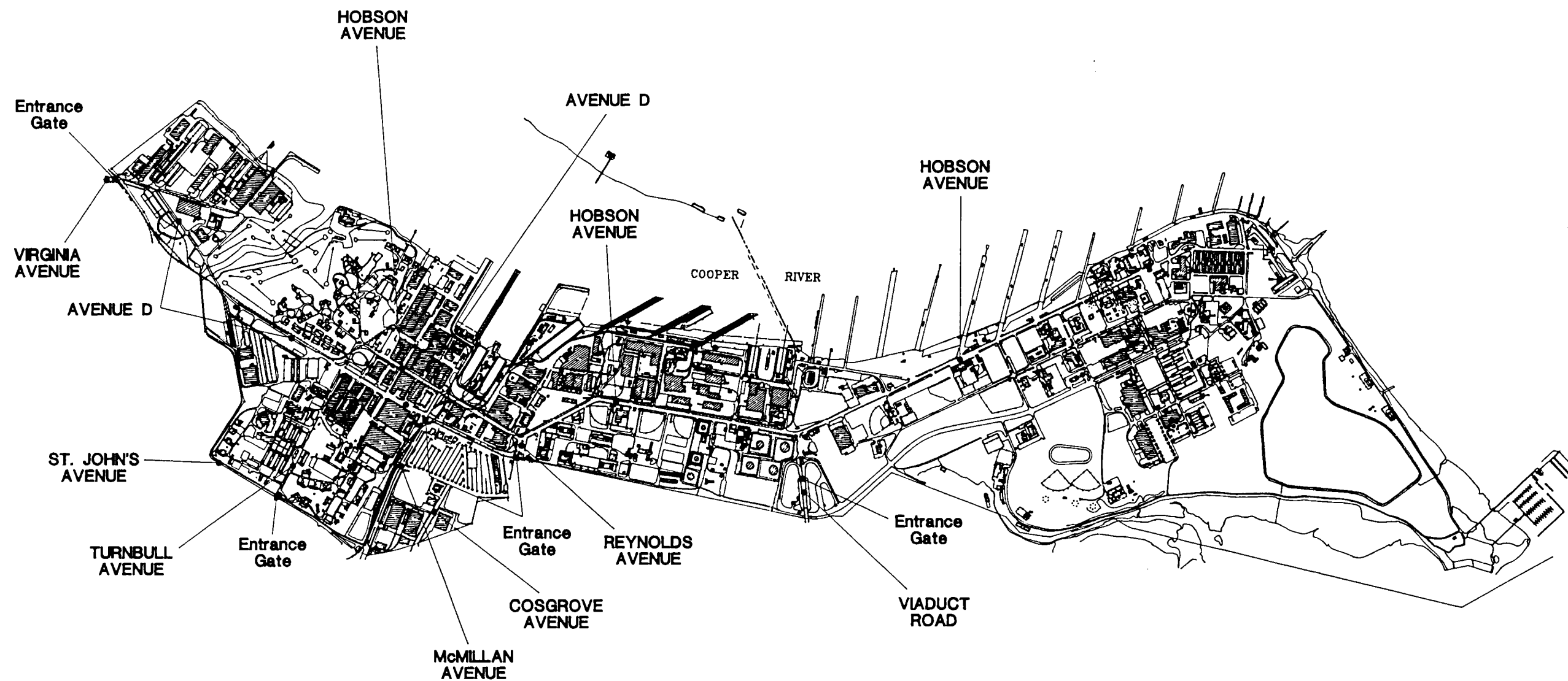


Figure 3-10 ON BASE ROADWAY NETWORK

00102-017

Table 3-12
REGIONAL TRAFFIC DATA
CHARLESTON COUNTY, SOUTH CAROLINA

Roadway	From	To	1990 AADT ^c	1992 AADT ^b	1993 AADT ^b	% Change 1990 to 1993
Burton/Viaduct	US 52/Rivers Avenue	Spruill Avenue	6,740	5,500	5,200	-23
Burton/Viaduct	Spruill Avenue	Viaduct Avenue Gate	19,290	19,000	18,100	-6
Reynolds Avenue	Spruill Avenue	Reynolds Gate	13,230	12,050	12,000	-9
Cosgrove Avenue	Interstate 26	US 52/Rivers Avenue	24,450 ^a	21,400	16,200	-34
Cosgrove Avenue	US 52/Rivers Avenue	Spruill Avenue	19,830	10,500	8,400	-58
McMillan Avenue	US 52/Rivers Avenue	Spruill Avenue	15,150	13,700	14,300	-6
Spruill Avenue	McMillan Avenue	Montague Avenue	18,050 ^a	13,200	11,900	-34
Spruill Avenue	US 52/Rivers Avenue	McMillan Avenue	17,260 ^a	16,000	13,400	-22
US 52/Rivers Avenue	Spruill Avenue	Burton Avenue	3,760	3,500	2,800	-26
US 52/Rivers Avenue	Burton Avenue	SC642/Dorchester Avenue	18,290 ^a	12,300	9,700	-47
US 52/Rivers Avenue	SC642/Dorchester Avenue	Durant Avenue	19,620 ^a	21,900	19,900	1
US 52/Rivers Avenue	Durant Avenue	Mall Drive	31,550 ^a	33,800	32,100	2
US 52/Rivers Avenue	Mall Drive	Remount Avenue	35,530 ^a	31,300	30,800	-13
US 52/Rivers Avenue	Remount Avenue	Mabeline Road	49,000	40,100	40,000	-18
Interstate 26	US 17 (Downtown)	Spruill Avenue	68,200	NA	61,830 ^a	-9
Interstate 26	Spruill Avenue	SC7/Cosgrove Avenue	76,500	86,100	75,700	-1
Interstate 26	SC7/Cosgrove Avenue	SC642/Dorchester Avenue	92,000	NA	85,100	-8

Key at end of table.

Table 3-12 REGIONAL TRAFFIC DATA CHARLESTON COUNTY, SOUTH CAROLINA						
Roadway	From	To	1990 AADT ^c	1992 AADT ^b	1993 AADT ^b	% Change 1990 to 1993
Interstate 26	SC642/Dorchester Avenue	Montague Avenue	92,300	74,300	75,100	-19
Interstate 26	Montague Avenue	Mark Clark Expressway	104,080	101,400	89,000	-14
Interstate 26	Mark Clark Expressway	Remount Avenue	93,100	NA	113,400	22
Interstate 26	Remount Avenue	US 52 Connector	93,800	NA	97,600 ^a	4
Interstate 26	US 52 Connector	US 78	67,600	NA	60,900	-10

^a Average of data for several roadway subsegments.

^b South Carolina Department of Transportation 1992, 1993.

^c U.S. Navy Southern Division Naval Facilities Engineering Command 1992.

Key:

AADT = Annual Average Daily Traffic.

Table 3-13
EXISTING ROADWAY PHYSICAL AND OPERATIONAL CHARACTERISTICS

Roadway	From	To	Length (ft)	Travel Lanes	Speed Limit (MPH)	Arterial Speed (MPH)	LOS (1990)
Burton/Viaduct Road	US 52/Rivers Ave.	Spruill Ave.	1,500	2	35	16	C
Burton/Viaduct Road	Spruill Ave.	Viaduct Avenue Gate	2,000	2	35	9	E
Reynolds Ave.	Spruill Ave.	Reynolds Gate	1,000	4	35	16	C
Cosgrove Ave.	Interstate 26	US 52/Rivers Ave.	4,650	6/4	40	15	C
Cosgrove Ave.	US 52/Rivers Ave.	Spruill Ave.	1,400	4	35	21	B
McMillan Ave.	US 52/Rivers Ave.	Spruill Ave.	1,700	4	35	18	C
Spruill Ave.	McMillan Ave.	Montague Ave.	7,950	4	40	19	C
Spruill Ave.	US 52/Rivers Ave.	McMillan Ave.	12,400	4	40	19	C
US 52/Rivers Ave.	Spruill Ave.	Burton Ave.	6,000	4	35	27	A
US 52/Rivers Ave.	Burton Ave.	SC 642/Dorchester Ave.	5,500	4	45	18	C
US 52/Rivers Ave.	SC 642/Dorchester Ave.	Durant Ave.	7,500	4	45	21	B
US 52/Rivers Ave.	Durant Ave.	Mall Drive	5,100	4	45	11	E
US 52/Rivers Ave.	Mall Drive	Remount Ave.	7,200	4/8	45	19	C
US 52/Rivers Ave.	Remount Ave.	Mabeline Road	11,850	6	45	23	C
Interstate 26	US 17 (Downtown)	Spruill Ave.	14,500	4	55	42	D
Interstate 26	Spruill Ave	SC 7/Cosgrove Ave.	8,000	6	55	47	C
Interstate 26	SC 7/Cosgrove Ave.	SC 642/Dorchester Ave.	4,600	6	55	42	D
Interstate 26	SC 642/Dorchester Ave.	Montague Ave.	12,500	6	55	42	D
Interstate 26	Montague Ave.	Mark Clark Expwy.	4,500	6	55	42	D

Table 3-13							
EXISTING ROADWAY PHYSICAL AND OPERATIONAL CHARACTERISTICS							
Roadway	From	To	Length (ft)	Travel Lanes	Speed Limit (MPH)	Arterial Speed (MPH)	LOS (1990)
Interstate 26	Mark Clark Expwy.	Remount Ave.	6,000	8	55	47	C
Interstate 26	Remount Ave.	US 52 Connector	16,200	6	55	42	D
Interstate 26	US 52 Connector	US 78	15,500	6	55	47	C

Source: U.S. Navy 1992.

five drydocks providing docking space for vessels calling on the Base (U.S. Department of the Navy 1994).

Commercial access to public shipping terminals is provided by the South Carolina State Port Authority (SCSPA), which currently operates four terminals within the Port of Charleston: Union Pier Terminal, Columbus Street Intermodal Terminal, Wando Container Terminal, and North Charleston Container Terminal. A summary of the numbers of vessels calling on the various SCSPA terminals, along with other specifications, is presented in Table 3-14 (SCSPA 1993; Groseclose 1994). In addition to the public shipping terminals, a number of private terminals related to energy resource facilities also operate in the greater Charleston Harbor area.

Table 3-14				
SOUTH CAROLINA STATE PORT AUTHORITY STATISTICS (1993)				
Terminal Name	Number of Ships	Number of Barges	Total Berthing Space (ft.)	Number of Berths
Union Pier Terminal	128	19	2,470	4
Columbus Street Terminal	362	47	3,875	5
Wando Container Terminal	492	0	3,700	4 ^a
North Charleston Container Terminal	337	0	3,135	4 ^b

^a Includes new berth currently being constructed.

^b Includes grain berth.

Source: SCSPA 1993; Groseclose 1994.

3.8.3 Rail Facilities

The Charleston Naval Base has direct access to two major rail corridors in the Southeast. Both Norfolk and Southern Railroad and CSX System provide rail access to the Naval Base. Both rail lines offer intermodal yards in Charleston with rail or highway access to all Charleston port terminals (SCSPA 1993). The Naval Base currently has approximately 12 miles of track installed linking material storage areas, piers, drydocks, and industrial buildings with the major rail corridors. All track is installed in the northern half of the complex, reaching as far south as the intersection of Hobson Avenue and Viaduct Road (U.S. Department of the Navy 1994).

3.8.4 Air Facilities

Air transportation for the Charleston metropolitan area is provided by Charleston International Airport, located in North Charleston. Access to Charleston International Airport is provided by minor arterial roadways from the Mark Clark Expressway. The runways at Charleston International Airport service both commercial air traffic and aircraft assigned to Charleston Air Force Base (USGS 1958b).

3.8.5 Mass Transportation

Mass transportation is provided by the Transit Division of the South Carolina Electric & Gas Company (SCE&G). SCE&G operates a fleet of buses that service 13 routes within Charleston County. The Liberty Homes, Dorchester Road-Waylyn, and North Charleston routes provide service to the Charleston Naval Complex at the Reynolds Avenue gate. In addition, the North Charleston route also provides service at the Virginia Avenue gate (Washington 1994).

The Navy currently operates a shuttle van service within the Base, servicing all of the major tenants, as well as the Naval hospital. The shuttle van follows a fixed route, and numerous pickup points are clearly designated throughout the base (Massey 1994).

3.9 Socioeconomics

3.9.1 Population

The Charleston Naval Base is located in the Charleston Standard Metropolitan Statistical Area (SMSA), also referred to as the Trident Region, which consists of Berkeley, Charleston, and Dorchester counties.

The 1990 population of the Trident Region was 506,875. A profile of the region's population is presented by county in Table 3-15. As shown in Table 3-14, more than 60% of the population is working age (ages 18 to 64). On the whole, the population distribution of the Trident Region is younger than that of South Carolina. Most households are made up of families, with an average of 2.74 persons per household. The racial composition of the Trident Region population is 67.8% white, 30.2% black, and 1.9% of other racial background. Of the population aged 25 and older, 75.5% have graduated from high school or have completed education beyond the high school level and 18.9% have attained a bachelor's degree or higher (U.S. Census 1992).

As shown in Table 3-16, population growth from 1980 to 1990 has been unevenly distributed among the counties, with the less-populated counties experiencing the greatest

Table 3-15					
1990 POPULATION PROFILE OF CHARLESTON AREA AND SOUTH CAROLINA					
	Berkeley County	Charleston County	Dorchester County	Charleston MSA	South Carolina
Total Population	128,776	295,039	83,060	506,875	3,486,703
AGE					
Under 18	41,751	73,605	24,568	139,924	920,207
%	32.4	24.9	29.6	27.6	26.4
18 to 64	79,572	191,553	52,356	323,481	2,169,561
%	61.8	64.9	63.0	63.8	62.2
65 and Over	7,453	29,881	6,136	43,470	396,935
%	5.8	10.1	7.4	8.6	11.4
HOUSEHOLDS					
Total Households	42,386	107,069	28,213	177,668	1,258,044
Family Households	34,083	73,392	22,317	129,792	928,206
%	80.4	68.5	79.1	73.0	73.8
Persons per Household	3.01	2.61	2.87	2.74	2.68
RACE					
White	93,900	187,553	62,323	343,776	2,406,974
%	72.9	63.6	75.0	67.8	69.0
Black	31,111	102,988	19,128	153,227	1,039,884
%	24.2	34.9	23.0	30.2	29.8
Other	3,765	4,498	1,609	9,872	39,845
%	2.9	1.5	1.9	1.9	1.1

Note: Percentages may not total 100% due to rounding.

Source: U.S. Bureau of the Census 1990.

Table 3-16 TOTAL POPULATION OF THE CHARLESTON SMSA AND THE STATE OF SOUTH CAROLINA DURING 1980 AND 1990			
	1980	1990	Percentage Change 1980 to 1990
Berkeley County	94,727	128,776	35.9%
Charleston County	276,974	295,039	6.5%
Dorchester County	58,761	83,060	41.4%
Charleston SMSA	430,462	506,875	17.8%
State of South Carolina	3,121,820	3,486,703	11.7%

relative growth. The region expanded by 17.8% during this period, adding more than 76,000 residents. The regional population is projected to increase to 562,900 in 1995 and to 692,900 in 2005, a 36.7% increase from 1990 to 2005 (TEDA 1994).

As of April 1994, the total active Navy population in the Charleston area was 18,022 (BCO 1994). In addition to the Navy personnel, there were an estimated 39,780 Navy dependents in the Charleston area during fiscal year 1993 (USN 1994a). The active Navy population is concentrated in Charleston County, as shown in Table 3-17, which is based on 1992 Navy population data. As shown in this table, the Navy population in Berkeley County is concentrated in Goose Creek, in Summerville in Dorchester County, and in Charleston/ North Charleston in Charleston County. (Note: Hanahan residents are included with North Charleston because they share a common zip code.)

3.9.2 Economy, Employment, and Income

Economy

The prominent features of Charleston's economy are the government sector, particularly the military; visitor industry; economic activity associated with the Port of Charleston; and a growing medical community.

The military's contribution to the local economy is substantial. The Charleston Naval Complex and Charleston Air Force Base employ more than 32,000 people and provide a combined annual payroll of more than \$1 billion (CBR 1994a). The pending closure of the Naval Base will reduce employment, payroll, and demand for goods and services. Table 3-18

Table 3-17			
NAVY POPULATION BY COMMUNITY IN THE CHARLESTON AREA DURING 1992			
County	Active	Civilian	Total
BERKELEY			
Cordesville	1	0	1
Cross	1	26	27
Goose Creek	1,816	592	2,408
Hanahan (included with North Charleston)			
Jamestown	0	9	9
Moncks Corner	54	291	345
Pineville	0	14	14
Pinopolis	0	7	7
Russellville	0	0	0
Shulerville	0	2	2
Wando	0	8	8
Remainder of Berkeley	0	0	0
Total Berkeley County	1,872	949	2,821
DORCHESTER			
Harleyville	1	16	17
Reeseville/Branchville	0	13	13
Ridgeville	3	148	151
St. George	2	45	47
St. Stephen	2	36	38
Summerville	791	1,133	1,924
Remainder of Dorchester	3	24	27
Total Dorchester County	802	1,415	2,217
CHARLESTON			
North Charleston/Hanahan ^a	17,021	1,957	18,978
Air Force Base	116	14	130
Naval Base	4,394	13	4,407
Charleston	830	1,335	2,165
Peninsula	262	167	429

Table 3-17 NAVY POPULATION BY COMMUNITY IN THE CHARLESTON AREA DURING 1992			
County	Active	Civilian	Total
West Ashley	385	1,138	1,523
The Citadel	26	2	28
College of Charleston	0	0	0
James Island	61	562	623
Awendaw	0	28	28
Adams Run	0	14	14
Bonneau	3	33	36
Edisto Island	1	4	5
Folly Beach	0	32	32
Hollywood/Meggett	0	79	79
Huger	0	18	18
Isle of Palms	6	68	74
Johns Island	7	139	146
Ladson	387	403	790
McClellanville	0	16	16
Mt. Pleasant	125	570	695
Ravenel	1	62	63
Sullivans Island	1	28	29
Wadmalaw Island	9	15	24
Yonges Island	0	0	0
Total Charleston County	18,452	5,363	23,815
TOTAL ALL COUNTIES	21,126	7,727	28,853

Note: Active totals include all naval facilities. Civilian totals count only those employees at the Naval Base and Shipyard - the closing facilities.

- ^a The 29408 zip code is shared by the cities of Hanahan and North Charleston; therefore, data for this area were unable to be separated. Although Hanahan and North Charleston Naval population figures are combined here, please note that Hanahan is located in Berkeley County.

Source: U.S. Navy data compiled by Center for Business Research 1993.

Table 3-18		
PERSONNEL, PAYROLL, AND PROCUREMENT OF NAVY OPERATIONS DOWNSIZING OR CLOSING		
	Before Closure ^a	After Closure ^b
PERSONNEL		
Military	13,543	—
Civilian	7,930	—
Contract	380	—
Total	21,853	1,335
GROSS PAYROLL		
Military	\$355,944,890	—
Civilian	308,272,741	—
Contract	18,059,943	—
Total	\$682,277,574	\$49,950,000
PROCUREMENT		
South Carolina Goods & Services	\$357,952,528	\$19,390,000

^a Based on FY 93 data for operations that are scheduled to close or downsize.

^b Estimates based on FY 93 data and scheduled reduction in Navy functions; estimates apply to totals only.

Source: *FY 93 Shareholder's Report, Charleston Naval Base*, 1994; U.S. Navy Base Closure Office, April and May 1994.

provides a summary of employment, payroll, and goods and services associated with Navy operations that will be closing or downsizing as part of the scheduled closure.

As of fiscal year (FY) 1993, the Naval Base and Shipyard employed 21,853 people, of whom 8,310, or 38%, of those employed were civilian or contracted employees. After closure (1996), employment is projected to be 1,335, a decrease of 94% from FY 1993 levels. Gross payroll for FY 93 was more than \$682 million and is estimated to be approximately \$50 million after closure, based on the Navy's projected employment. The Naval Base and Shipyard procured approximately \$358 million in South Carolina goods and services; post-closure procurement is estimated at approximately \$19 million, based on projected personnel levels.

The Navy, through contributions from its military and civilian personnel, also contributed \$1.7 million to the community through its Combined Federal Campaign, of which \$809,000 went to the Trident United Way and other local unaffiliated agencies (USN 1994a). Total federal aid funds received by the Trident Region for FY 93 were more than \$5.7 million, and were distributed to the counties as shown in Table 3-19.

Other sectors of the economy have fared better than the military sector in recent

Table 3-19	
FEDERAL AID FUNDS, FY 93	
Berkeley County	\$3,210,030
Charleston County	\$1,920,904
Dorchester County	\$599,371

years. Table 3-20 presents economic activity data from 1986 to 1993 for the visitor, retail, transportation, and construction sectors of the economy.

The visitor industry has been a positive influence on the local economy, offsetting job loss from the military sector. Two factors improving the outlook for the visitor industry are the apparent success of recent Trident marketing efforts in stretching the traditional peak tourist seasons, and the addition of Continental Airlines service to Charleston International Airport in 1993 (CBR 1994b). Total flights to the airports increased to 98 per day in 1993 from 75 per day in 1992 (CBR 1994b).

Gross retail sales benefitted from improvements in the visitor industry. Although retail sales were relatively flat from 1990 to 1992, 1993 showed a 6.2% increase over 1992

Table 3-20								
SELECTED ECONOMIC ACTIVITY								
Fiscal Year	1986	1987	1988	1989	1990	1991	1992	1993
Visitors								
Total Attraction								
Attendance (millions)	1.34	1.32	1.49	1.19	0.99	1.23	1.33	1.30
Hotel Occupancy (%)	—	—	63.0	66.5	71.5	64.4	62.9	64.5
Retail Trade								
Gross Retail Sales (\$M)								
Trident Area	5.70	6.36	6.69	7.06	8.08	8.00	8.02	8.52
Transportation								
SC Port Authority Tonnage								
Total Cargo (million tons)	5.59	6.73	7.67	8.51	8.56	8.29	8.51	8.44
Construction								
New Permits, Number								
Residential	4123	4030	3248	2603	3542	2835	3398	2817 ^a
Non-residential	704	1020	822	766	736	686	668	614 ^a
New Permits, Value (\$)								
Residential	206,100	250,571	228,720	188,734	263,305	238,256	281,981	264,180 ^a
Non-residential	124,900	105,256	107,535	112,253	128,299	150,993	91,306	108,700 ^a
New Permits, Value (\$) Permit								
Residential	50	62	70	73	74	84	83	94 ^b
Non-residential	177	103	131	147	174	220	137	177 ^b

^a Preliminary estimates.

^b Based on preliminary estimates.

Source: 1994 Trident Economic Forecast, Center for Business Research (data compiled from several primary sources).

sales. New retail outlets, including Home Depot and WalMart, contributed to the increased sales.

The Port of Charleston is another healthy and growing sector of the local economy. Operated by SCSPA, it is the number one containerized port on the South Atlantic and Gulf coasts (CBR 1994a). It is an operating port, rather than a landlord port, providing a range of services to port users. As a state enterprise agency, the SCSPA receives no state funds for operations and does not provide a share of its revenues to the state or local governments; it does, however, contribute directly to some local economic development (Groseclose 1994).

The Port of Charleston is operating at a high utilization rate, its growth constrained by current capacity (Groseclose 1994). The Wando Terminal is undergoing expansion that was scheduled for completion late in 1994, which will increase container capacity by 20% to 25% (Groseclose 1994). The SCSPA has plans to expand its capacity in Charleston, possibly as part of the Base reuse plan or at a potential Cargo Terminal facility to be constructed at Daniel Island.

Construction activity in the Trident Region has emitted mixed signals, but that is not unusual for this cyclical industry. However, using permits as an indicator of construction activity, the trends for both residential and nonresidential construction have been downward. Construction employment, discussed below, underscores the trend. The average dollar value per permit has maintained a modest but steady increase for residential construction, but has fluctuated somewhat dramatically for nonresidential construction.

Employment

Employment in the Trident Region reflects the dominant sectors of the economy: government, services, and trade. As shown in Table 3-21, nearly 75% of nonagricultural employment for 1992 was in government, services, and trade, with government employment leading all sectors with 26.75%. Service sector employment expanded by 20% from 1988 to 1992, a gain unmatched by any of the other sectors.

Employment in construction, and finance, insurance, and real estate (FIRE) contracted by 9.0% and 10.2%, respectively, over the same period. The implications of these shifts in employment are discussed later in this section.

As noted earlier, military employment in the Trident Region has contributed significantly to the local economy. However, military employment has been declining, even prior to the Base closure announcement. Table 3-22 shows total and military employment for the region from 1988 to 1993. Total military employment has declined nearly 36% over the

Table 3-21			
EMPLOYMENT BY SECTOR			
Sector	1992	% of Total Employment	% Change: 1988 to 1992
Construction	12,200	5.98	-9.0
Manufacturing	20,500	10.04	0.0
TCPU ^a	10,600	5.19	-0.9
Trade	49,600	24.30	4.2
FIRE ^b	7,900	3.87	-10.2
Services	48,700	23.86	20.0
Government	54,600	26.75	5.8
Total	204,100		

^a Transportation, Communications & Public Utilities.

^b Finance, Insurance & Real Estate.

Source: Trident Economic Development Authority, 1994.

period, and Naval Base employment has declined by more than 41%. The unemployment rate has risen steadily since 1990.

Despite the substantial contraction of military employment, total employment for the region has changed relatively little during the same period. This reflects growth in other sectors of the economy, particularly the service sector.

Although losses in military jobs have been offset by the expansion of the service sector, the new jobs do not, on average, provide a comparable wage level. Table 3-23 shows 1992 employment by sector as a share of total employment change from 1988 employment, and the corresponding average weekly wage for each sector. These data highlight trends influencing the character of the economy, labor, and employee purchasing power in the Trident Region.

The service sector has an average weekly wage of \$355, which is lower than all levels of government wages. Federal wages have the highest average weekly wage, \$661. Although government employment has the largest share of employment, the loss of high-paying federal jobs, combined with growth in the service sector and retail (from the visitor industry), represents an important shift in employment and wages.

Also of interest are the effects of losing 9.0 and 10.2% employment in the construction and FIRE sectors, respectively, and gaining 20% in the service sector. The average weekly wages for these two declining sectors are \$405 and \$458, compared with \$355 for the

Table 3-22
CHARLESTON TRIDENT REGION TOTAL AND MILITARY EMPLOYMENT
1989 TO 1993

	89	90	91	92	93 ^a	1989 to 1993 % Change
Total Trident Employment	251,990	259,680	261,090	256,280	249,680	-0.9%
Military Employment ^b (includes Air Force Base)	51,600	49,300	47,900	41,700	33,080	-35.9%
Naval Base Employment ^b	45,379	43,456	41,833	35,656	26,742	-41.1%
Naval Base Employment as % of Total ^b	18.0%	16.7%	16.0%	13.9%	10.7%	—
Civilian and Contractor Employment at Naval Base	16,832	15,898	15,619	13,525	11,883	-29.4%
Unemployment Rate (%)	4.1	3.4	4.8	5.7	6.2	—

^a Preliminary estimate.

^b Military and Naval Base employment includes active military and civilian employment.

Source: 1994 Trident Economic Forecast, Center for Business Research.

Table 3-23			
1992 EMPLOYMENT AND WAGES BY SECTOR			
Sector	Share of Total Employment (%)	Percent Change, 1988-92	Average Weekly Wage (\$)
Construction	5.98	-9.0	405
Manufacturing	10.04	0.0	564
TCPU ⁽¹⁾	5.19	-0.9	465
Trade	24.30	4.2	494 (wholesale) 226 (retail)
FIRE ⁽²⁾	3.87	-10.2	458
Services	23.86	20.0	355
Government	26.75	5.8	661 (Federal) 499 (State) 393 (Local)

Notes: (1) Transportation, Communications, and Public Utilities
(2) Finance, Insurance, and Real Estate

Sources: Trident Economic Development Authority 1994; South Carolina Employment Security Commission 1994.

service sector. The higher-paying construction and FIRE sectors make up less than 10% of employment, whereas the service sector employed nearly 24% and is still growing.

Income

On average, the Trident Region is a relatively affluent area in South Carolina. According to the *1990 Census of Population and Housing*, the per capita income in the Charleston MSA was \$12,334, which is 3.7% higher than the statewide per capita income of \$11,897. However, the region's per capita income was not distributed evenly, as shown in Table 3-24.

Charleston Naval Base and Shipyard are located in Charleston County. As a further example of the variance in per capita income in Charleston County and the Trident Region, the per capita income in the Chicora neighborhood, which borders the Naval Complex's west side, was \$5,725, or 56% below that of Charleston County as a whole. Per capita income data for North Charleston and Chicora also are listed in Table 3-24.

<p align="center">Table 3-24</p> <p align="center">1990 PER CAPITA INCOME FOR THE SOUTH CAROLINA AND TRIDENT REGION</p>	
	1990 Per Capita Income (\$)
South Carolina	11,897
Charleston MSA	12,334
Berkeley County	10,942
Dorchester County	11,884
Charleston County	13,068
North Charleston	10,315
Chicora	5,725

Note: All figures are from the 1990 U.S. Census

Sources: U.S. Bureau of the Census 1992
City of North Charleston 1994

3.9.3 Taxes and Revenues

South Carolina collects revenues from a variety of taxes and fees, including corporate and personal income taxes, motor fuel taxes for gasoline and ethanol blends, and a 5% sales tax. All sales tax revenues are earmarked for education, a statutory requirement, and are distributed based on need (Shuford 1994).

The state also collects a "local option" sales tax of 1% for local governments that opt for it to supplement property tax revenue; the state collects the 1% optional sales tax for Charleston County (Shuford 1994). For FY 92-93, the state collected approximately \$31.5 million from Charleston County, of which approximately \$9.9 million and \$12.6 million were collected from the cities of North Charleston and Charleston, respectively (SCTC 1993). Approximately 65% of these revenues is distributed to the county, and 35% to the cities (SCTC 1993). The state does not collect the local sales tax for Berkeley and Dorchester counties.

Property taxes are collected at the county level. The state assesses manufacturing property, and the counties assess all other property. The property tax millage rates for the City of North Charleston are 4% for residential property; 6% for nonowner-occupied, nonindustrial property; and 10% for industrial property. Total assessed value of property for the City of North Charleston for 1993 was \$197,636,502 (Henderson 1994).

Charleston County's FY 94 budget is \$78.8 million, a 5.4% increase over the previous year. Berkeley County's FY 93-94 budget is approximately \$23.11 million. The major sources of revenue are county general taxes, vehicle taxes, and state income tax revenues. Major expenditures are the Sheriff's department, roads and bridges, and emergency medical services (Berkeley County 1993). Dorchester County's FY 93-94 budget is approximately \$14.95 million, with major revenue sources of property and vehicle taxes and state-shared revenues. Major expenditures are the Sheriff's department, roads, solid waste, emergency medical services, and personnel (Ogletti 1994).

The FY 93-94 budget for the city of North Charleston is \$26.09 million. Most of North Charleston's revenues are from property taxes, the local option sales tax, and business license fees. The city received \$18,000 in payments in lieu of taxes for FY 93-94. Major expenditures are the police and fire departments, and public works (Henderson 1994).

3.9.4 Economic Development

The most important economic development program with respect to the closure of the Naval Base is the Charleston Naval Complex Reuse Plan developed by the BEST Committee, which is described in Section 2.

Other economic development efforts in the Trident Region include marketing and regional promotion by the Trident Economic Development Authority (TEDA) and the Tricounty Council of Governments (COG). TEDA has been actively marketing the visitor industry and is targeting the medical industry as a desirable industry to expand in the region.

In the recently released Charleston Trident Area Economic Development Strategy, a study prepared for TEDA, the fundamental tasks of the TEDA marketing program are to retain and expand existing businesses by improving the business climate, promote entrepreneurship (e.g., medical research and spin-off ventures), and attract new businesses to the Trident area. The economic development strategy identifies several target industries and geographical areas that could be encouraged to relocate to the Trident area. Examples of industries include manufacturers with strong export markets, such as machine tools, that could benefit from Charleston's port location and strength; medical research; and corporate administrative operations (GSO 1994).

The COG generates an Overall Economic Development Plan, an ongoing economic strategy for the region. It is also preparing a regional recovery strategy to address economic impacts resulting from the Base closure; this strategy will be used, in part, to apply for federal Economic Development Authority funds (Craig 1994).

3.9.5 Housing and Development Trends

During 1990, the Charleston SMSA experienced low homeowner and low rental vacancy rates. The average homeowner vacancy for the Charleston SMSA was 2.0%. Berkeley County recorded the lowest homeowner vacancy rate with 1.7% of its total units vacant; Dorchester County had the highest homeowner vacancy rate with a rate of 2.2%. Rental vacancy rates in the Charleston SMSA were substantially higher than vacancy rates for owner-occupied units. The average rental vacancy rate during 1990 in the Charleston SMSA is shown in Table 3-25.

The median value of housing units in the Charleston SMSA was significantly higher

Table 3-25					
1990 HOUSING STATISTICS FOR BERKELEY, CHARLESTON, AND DORCHESTER COUNTIES, CHARLESTON SMSA, AND THE STATE OF SOUTH CAROLINA					
	Total Number of Units	Homeowner Vacancy Rate	Rental Vacancy Rate	Median Value	Median Contract Rent
Berkeley County	45,697	1.7%	4.7%	68,500	357
Charleston County	123,550	2.0%	9.0%	73,800	346
Dorchester County	30,632	2.2%	7.5%	73,600	335
Charleston SMSA	199,879	2.0%	8.0%	72,200	347
State of South Carolina	1,424,155	1.7%	11.4%	61,100	276

Source: U.S. Bureau of the Census 1992.

than housing units in the State of South Carolina as a whole. In 1990, housing units in the Charleston SMSA had a median value of \$72,200 compared with the statewide figure of \$61,100. However, as shown in Table 3-25, there was a variation in the median value of housing units within the Charleston SMSA.

Corresponding to the high property values and the relatively low vacancy rates, rental prices in the Charleston SMSA are significantly higher than in the state as a whole. The median contract rent in the Charleston SMSA was \$347 compared with the statewide median of \$276.

The demand for housing in the Trident Region has been relatively stable over the past 10 years. Since the early 1980s, housing starts in the Trident Region have remained relatively stable with approximately 3,000 housing starts per year. In 1993 the average price

of new housing in North Charleston was approximately \$80,000 with only slightly more than 50 new homes sold. Resale housing units averaged approximately \$70,000 in 1993 with more than 300 units being sold. Resale actively declined by nearly 34% over the 1992 level (Hamilton, Rabinovitz and Alschuler, Inc., 1994).

There are 86 family housing units located on the Base. As of May 1994, all 86 units were occupied with a total of 170 military dependents residing on base (USN 1994b). Approximately one-third of these units are 1,500 to 2,000 square feet; the remainder of these units are considerably larger (Hamilton, Rabinovitz, and Alschuler, Inc., 1994).

3.10 Infrastructure and Utilities

3.10.1 Water Supply

Water is supplied to the Charleston Naval Base by the Charleston Commission of Public Works (CCPW) via a 48-inch transmission line from the CCPW's Hanahan water plant. The Hanahan plant draws its water from the Edisto River and will soon be taking water from an intake on Foster Creek. Water is piped to one of five points in the complex through a series of mains ranging from 12 inches to 24 inches in size. From the five delivery points, water is distributed throughout the complex through a series of 16-, 14-, 12-, 10-, and 8-inch mains (See Figure 3-11). The mains vary in age and are made of various materials, including cast iron, ductile iron, polyvinyl chloride (PVC), steel, and polypropylene. The distribution system is connected and looped, allowing water to be brought to a point from numerous locations. There is a problem with low pressure in the system along the piers and in some of the residential areas. Small pipe diameters and increasing water demand in the residential areas are believed to be the cause of low pressure in these areas; the suspected cause for low pressure along the pier areas is the high demand for water for the cooling of submarines (BEST 1994).

The complex has 1.5 million gallons of water in inground storage and 500,000 gallons of water in aboveground storage. A 1 million-gallon inground storage tank is located off McMillan Avenue near Avenue "D." Water from this tank is used for emergency cooling of the powerhouse and for fire-fighting emergencies. Another inground storage tank (storage capacity of 500,000 gallons) is located at Hobson Avenue across from building NS16. The 500,000-gallon elevated storage tank is located on Avenue "F" near building NH62. At the present time, none of these storage tanks is used as a part of the water distribution system (U.S. Department of the Navy 1985).

Lead has been found in the drinking water at several locations on the Base. Corrective actions have been taken at some of these locations, primarily by replacing older water coolers with lead-free ones (U.S. Department of the Navy 1994).

3.10.2 Wastewater System

Wastewater collection at the Base is accomplished using a series of gravity lines and lift stations that direct the wastewater to the North Charleston Sewer District (NCSD) pumping station located adjacent to Viaduct Road. The sewage lines range in size from 8 inches to 30 inches in diameter and are made from a variety of materials, including PVC, ductile iron, and cast iron (see Figure 3-12). There are several oil/grease separators and individual septic tanks scattered throughout the complex that provide site-specific pretreatment before the wastewater enters the main system (BEST 1994).

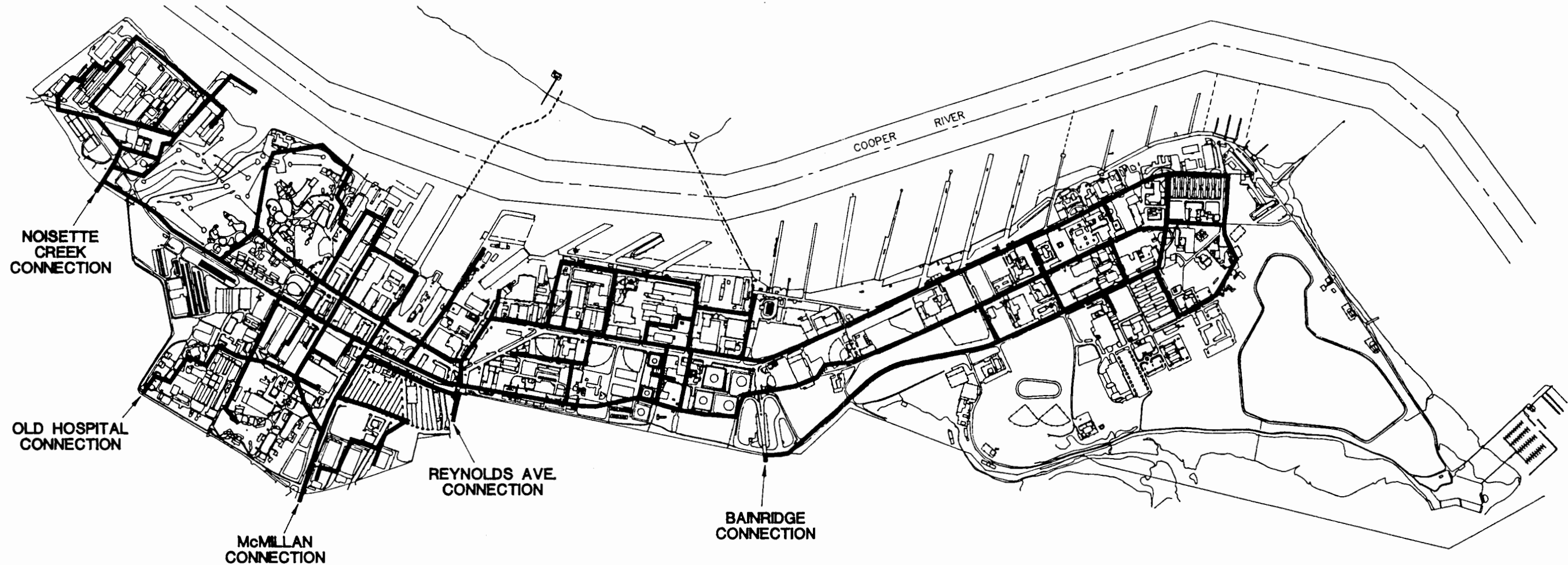
From the main pumping station, all wastewater is transported to the NCSD Herbert Street sewage treatment plant located on the Cooper River near Shipyard Creek. This sewage treatment plant has the capacity to treat approximately 27 million gallons a day (mgd) and is currently treating approximately 18 mgd. The Charleston Naval Base contributed an estimated 16% of the existing wastewater flows, or 3 mgd, in February 1994 (Kauffman 1994). In 1994, NCSD received 11.4% of its total revenues from the Naval Base. NCSD estimates the net economic annual effect by the Base Closure at \$5.8 million, which includes direct loss, associated loss, and related cost resulting from previous expansions that were required to meet growth while providing consumption to the Navy (Green 1995).

The Base is experiencing an infiltration/inflow problem with its sewage collection system that is adding an additional .75 mgd to the system. It is suspected that the infiltration/inflow problem occurs in areas where there are cross connections of the storm water system with the wastewater collection system (BEST 1994).

3.10.3 Storm Water Drainage

There is no single storm water collection system servicing the Charleston Naval Base. Instead there are numerous local systems of inlets and pipes that transport the runoff by gravity to the nearest natural drainage channel or waterway. About 50 of the outfalls discharge into the Cooper River; the remainder discharge into Shipyard Creek or Noisette Creek (see Figure 3-13).

The northern one-third of the Base is serviced by an older system, but it is considered more efficient because of its relatively higher elevations. The middle third of the Base is served by underground pipes composed primarily of clay. This area has one small and two



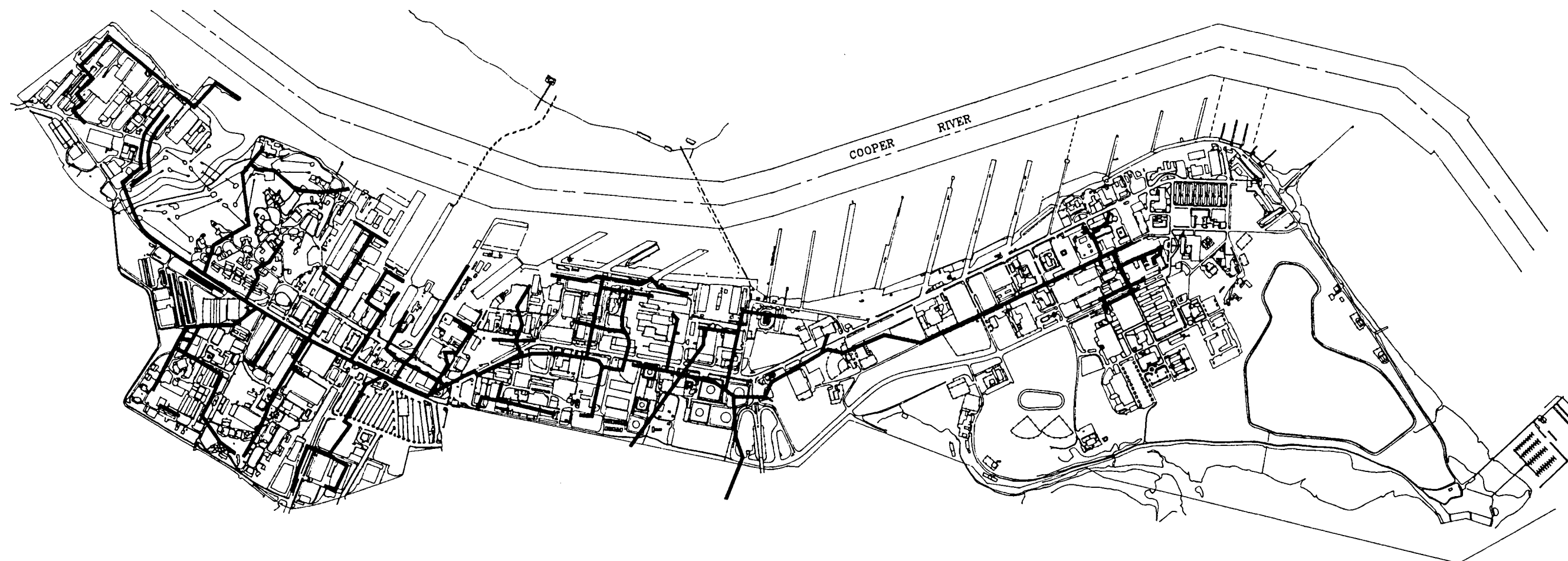
LEGEND
— WATER MAIN

ecology and environment

Source: U.S. Department of the Navy 1983
 U.S. Department of the Navy 1983a
 U.S. Department of the Navy 1988
 U.S. Department of the Navy 1989

Figure 3-11 POTABLE WATER LINES AT CHARLESTON NAVAL BASE

00102 LB10Z



LEGEND

— SANITARY SEWER LINE

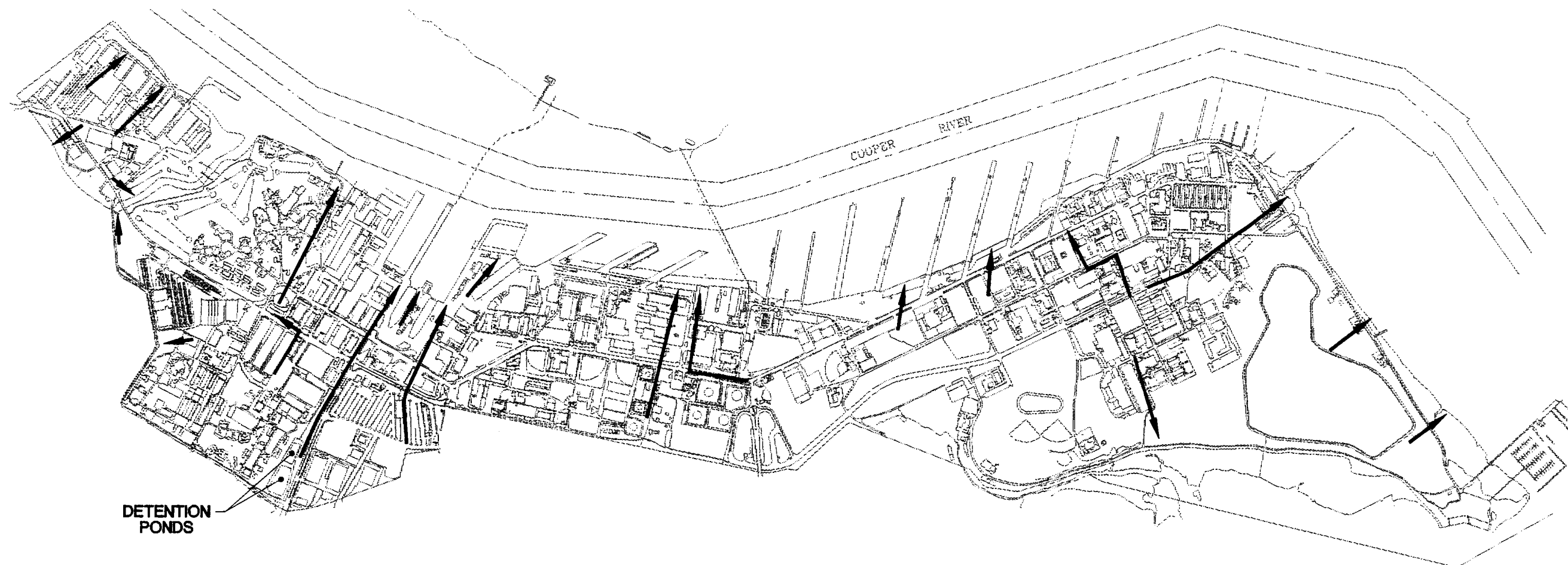
SCALE IN FEET



ecology and environment

Source: U.S. Department of the Navy 1983
 U.S. Department of the Navy 1983a
 U.S. Department of the Navy 1988
 U.S. Department of the Navy 1989

Figure 3-12 SANITARY SEWER LINES AT
 CHARLESTON NAVAL BASE



DETENTION
PONDS

COOPER
RIVER

LEGEND

→ DIRECTION OF FLOW

SCALE IN FEET

0 18000 36000 54000

Figure 3-13 GENERALIZED STORM WATER
DRAINAGE PATTERN AT THE
CHARLESTON NAVAL BASE

large retention ponds that receive water from the pumping station on McMillan Avenue. The outfall from these ponds discharges into an underlying piping network that eventually discharges into the Cooper River. The low elevations of this part of the complex, combined with poor subsurface soils, create a poor drainage pattern. High tides reduce the head and, consequently, the flow of storm water runoff through the system. In addition, the poor soils allow the piping infrastructure to settle, thus disrupting the drainage patterns further. The system in the southern portion of the complex is the newest; however, it has the most problems because of infrastructure settling as a result of the subsurface soil conditions. All of the storm water generated in this area discharges into either Shipyard Creek or the Cooper River (BEST 1994).

3.10.4 Electricity

Electricity is provided to the Charleston Naval Base via four major substations: two serving the northern section of the Base and two serving the southern section of the Base. Power is distributed throughout the Base at 13.2 kV via four separate overhead feeder lines. For backup power, the Base has one steam-powered turbo-generator providing 5,000 kVA at 2.4 kV. In addition, the Base has two diesel generators that can provide 1,250 kVA each and a third generator that can provide 1,500 KW of electricity (U.S. Department of the Navy 1985).

3.10.5 Heating System

The Charleston Naval Base is serviced by a centralized steam distribution service that provides steam for processes associated with dockside repair and maintenance activities, building heating, and hot water. The primary steam-generation unit for the complex is the Foster Wheeler Waste-to-Energy Boiler located adjacent to the Base. This plant has a steam capacity of 127,000 pounds per hour (lbs./hr) at 150 pounds per square inch (psi). The Navy is currently in its fifth year of a 20-year contract with Foster Wheeler for the purchase of steam. Under the contract, the Navy is required to purchase at least 500,000 million pounds of steam at 150 psi per year on a take or pay contract. Often, the plant is unable to supply a continuous flow of steam to the complex because of wet garbage, tube leaks, or insufficient volumes of refuse. In such cases, the Navy uses a No. 2 oil-fired boiler located outside Building 32 for backup.

Other sources of steam for the complex include two oil-fired boilers (20,000 lbs./hr. each) that run on diesel fuel in Building NS-44, three oil-fired boilers (30,000 lbs./hr. each)

that also run on diesel fuel in Building 123, and five coal-fired boilers (60,000 lbs./hr. each) located adjacent to the powerhouse at the McMillan entrance to the complex.

The steam is distributed throughout the complex via a 15-mile system of overhead and underground steam distribution lines that range in size from 2 inches to 18 inches in diameter. Approximately 40% of the steam distribution system is aboveground, and approximately 60% of the steam distribution system is underground (BEST 1994).

3.11 Community Services and Facilities

3.11.1 Schools

Most of the school-age children of military and civilian workers at the Base attend public schools in Charleston, Berkeley, and Dorchester school districts. In addition, a number of students attend private schools operated under the auspices of the Catholic Diocese of Charleston, South Carolina.

A large source of public school district operating revenues typically is ad valorem private property taxes paid by taxpayers residing within the district. Federally owned facilities such as the Naval Base are exempt from local taxes, even though they often contribute significantly to student populations in the local school system.

To compensate school districts for having to accommodate increased student populations with no corresponding expansion of the local tax base, the United States Department of Education Impact Aid Program provides financial assistance to public school districts for federally connected students. These students have at least one parent employed by the federal government or reside on federal property such as a military installation, an indian reservation, or low-income housing. Based on specific eligibility criteria, a certain amount of federal assistance is issued for each eligible student. There are two general categories of students: "A" students are those who reside on federal property with a parent employed on federal property (civilian) or have a parent on active duty in the "uniformed services" (military); "B" students are those who reside on nonfederal property with a parent employed on federal property (civilian) or have a parent on active duty in the uniformed services (military) (U.S. Department of Education, Office of Impact Aid n.d.). Handicapped students draw slightly more aid than nonhandicapped students. See Table 3-26 for the average daily attendance of federally connected students and the corresponding federal impact aid received by public school districts in the Trident Region. These totals include students affiliated with all military installations and federal activities in the area, including Army, Air

Force, Coast Guard, and the Naval Weapons Station, in addition to the Charleston Naval Base.

Table 3-27 identifies the number of federally connected students affiliated with the Charleston Naval Base and the estimated amounts of impact aid generated. Of the total \$4,898,372 in federal impact aid received by Charleston, Berkeley, and Dorchester County school districts, approximately \$792,241 is received as a result of Charleston Naval Base-affiliated students.

The federal impact aid program is currently in a reauthorization mode. Legislation is pending that would reduce the amount of impact aid received by school districts for some federally connected students. The proposed changes would eliminate all aid payments for B students, those who live on nonfederal properties. The time frame for congressional approval is presently unknown. Consequently, it is unknown when funding changes will be implemented (Galvin 1994).

The South Carolina State Department of Education provides financial assistance to public school districts through several programs. The majority of state assistance to districts is provided through the Education Finance Act program (EFA), which provides \$870 million statewide, divided between the districts using a financial equity formula and based on pupil average daily membership (Cooley 1994).

<p align="center">Table 3-26</p> <p align="center">AVERAGE DAILY SCHOOL ATTENDANCE (ADA) OF FEDERALLY CONNECTED STUDENTS FROM ALL CHARLESTON-AREA MILITARY INSTALLATIONS, AND FEDERAL IMPACT AID RECEIVED BY SCHOOL SYSTEMS IN THE STUDY AREA</p>						
	ADA of Federally Connected Students				Total ADA	Total Federal Impact Aid Received in FY 93
	Military A	Civilian A	Military B	Civilian B		
Charleston County	1,175	34	2,061	4,864	8,134	\$1,120,904
Berkeley County	2,689	0	3,463	2,507	8,659	\$3,210,409
Dorchester County	0	0	2,413	1,267	3,680	\$567,059
Total	3,864	34	7,937	8,638	20,473	\$4,898,372

Source: U.S. Department of Education 1993.

Table 3-27							
PUBLIC SCHOOL DISTRICT DISTRIBUTION OF CHILDREN OF CHARLESTON NAVAL BASE PERSONNEL AND FEDERAL IMPACT AID GENERATED							
Total of All Students in School District	Charleston County		Berkeley County		Dorchester County		
	44,377		28,176		15,335		
Federal Impact Aid Category	A Students	B Students	A Students	B Students	A Students	B Students	Total
Naval Shipyard	29	2,290	0	1,417	0	0	3,736
Naval Station	6	250	0	117	0	1,010	1,383
Naval Supply Center	0	0	0	140	0	0	140
Hunley Park Naval Housing	332	0	0	0	0	0	332
Total Naval Base Students	367	2,540	0	1,674	0	1,010	5,591
Estimated federal impact aid generated by Naval Base Students (subtotal)	\$279,705	\$73,152	\$0	\$283,743	\$0	\$155,641	\$792,241
Estimated federal impact aid generated by Naval Base Students (total)	\$352,857		\$283,743		\$155,641		\$792,241

Note: Figures for Hunley Park Naval Housing include only those affiliated with the closing facilities.

Source: Ecology and Environment, Inc. 1994, U.S. Department of Education 1992 and 1993, Charleston County School District 1994, Hendrick 1994, and Lim 1994.

Charleston County School District

The Charleston County School District operates 44 elementary schools (grades K-5), 15 middle schools (grades 6-8), 10 high schools (grades 9-12), five special-education satellite facilities, and one area vocational school in a single, countywide school system. In 1993-1994, the district's 2,942 teachers served an average daily attendance of 44,377 students (Charleston County School District 1994). Student-to-teacher ratios typically range from 29:1 to 13:1, and average 19:1 countywide (Hartley 1994). In recent years, the Charleston County School District has experienced a net gain of approximately 800 students per year (Hartley 1994).

In FY 1993, the Charleston County School District received approximately \$1,120,904 in federal impact aid for 8,134 eligible students (U.S. Department of Education 1993). Of this, an estimated \$102,087 was received as a result of 2,907 Charleston Naval Base-connected students. An average of \$762.14 in federal aid was received per A student and \$28.80 per military B student. See Table 4-25 for a summary of Naval Base-affiliated students' estimated federal impact aid allotments.

In the 1993-1994 school year, the school district received a total of \$48,960,792 in state EFA aid, or an average of \$933 per student (South Carolina Department of Education 1994).

The Charleston County School District estimates that it costs approximately \$4,000 per year to educate one student (Hartley 1994).

Berkeley County School District

Berkeley County School District operates 37 schools in a single, countywide school district. There are 16 elementary schools, three intermediate schools, eight middle schools, eight high schools, and two vocational/career centers. Three Berkeley County schools (two elementary and one middle) are located on the Naval Weapons Station. Approximately 90% of the students at the three schools are Navy- and Air Force-affiliated (Coffey 1994). In the 1993-1994 school year, the district's professional staff administered to 28,176 students (Hendrick 1994) of which 1,674 were Charleston Naval Base-connected. The student-to-teacher ratio in the county is 28:1 for high schools and ranges from 22:1 to 27:1 for elementary schools (Coffey 1994).

Of the schools potentially affected by the Naval Base closure (Marrington Elementary, Marrington Middle, MenRiv Elementary, Goose Creek High, Stratford High, and Westview School), some are operating below capacity and some are above capacity. For example, with 1,382 students, Goose Creek High is operating 200 to 300 students below its

capacity. In contrast, Stratford High is operating with 1,200 students, which is 200 more than its designed 1,000-student capacity. Stratford, along with six of the county's eight middle schools, has added mobile classroom units to accommodate increased student populations (Coffey 1994).

In FY 1993, the Berkeley County School District received \$3,210,409 in federal impact aid for 8,659 federally connected students (U.S. Department of Education 1993). This includes approximately \$292,727 that can be attributed to the 1,647 Naval Base-affiliated students. The district received an average of \$169.50 for each B student. There are no A students associated with the Naval Base residing in Berkeley County. See Table 3-27 for a summary of federal impact aid allotments for Naval Base-affiliated students.

In 1993-1994, the school district received a total of \$42,265,808 in state EFA aid, at an average of \$1,297 per student (South Carolina Department of Education 1994).

Dorchester County School Districts

Dorchester County is divided into two public school districts. Of these, only Dorchester County School District Two is likely to experience any noticeable impacts from base closure (McWhirt 1994). District Two operates 10 elementary schools, three middle schools, and two high schools. Student enrollment in the 1993-1994 school year totaled 15,335, and there were 1,514 teachers and support personnel. Over the last five years, the district has experienced a net gain of 400 students per year. The average student-to-teacher ratio is 21:1 for grades 1 through 3, and 26:1 for grades 4 through 12 (Dorchester School District Two 1994). Schools potentially impacted by base closure include Oakbrook Elementary and Oakbrook Middle. These schools, with approximately 200 and 280 students, respectively, operate below their capacity (Lim 1994).

In fiscal year 1993, Dorchester School District Two received \$567,059 in federal impact aid for 3,680 eligible students (U.S. Department of Education 1993). Of this, an estimated \$159,494 was attributable to 1,010 Naval Base-affiliated students. The district received an average of \$154.10 for each B student. There are no A students enrolled in the district. Because of the uncertainty surrounding the reauthorization of the federal impact aid program, Dorchester County District Two has excluded federal impact aid from the 1994-1995 school budget (McWhirt 1994).

In 1993-1994, the school district received \$21,948,712 in state EFA aid, or an average of \$1,250 per student (South Carolina Department of Education 1994).

3.11.2 Day Care/Child Development Facilities

There are three Navy-operated centers that provide child care for Charleston-area Navy personnel. One of these is located at the Charleston Naval Base, and two centers are located at the Naval Weapons Station. The center located at the Naval Base is the only one scheduled to be closed.

The center located at the Base provides care for 120 full-time children on a daily basis. The remainder of its 147-person building capacity is reserved for drop-in hourly care and child development professionals. The center regularly operates below its capacity. No figures are available on the number of enrolled children associated with military installations in the area that are not closing (Chandler 1994).

The majority of children who attend the two centers at the Naval Weapons Station are children of Weapons Station personnel, rather than children of Naval Base personnel. The Child Development Center accommodates 135 full-time children daily. With 65 personnel, the center operates at its building capacity of 200. Currently, there is a waiting list of approximately 6 months to one year for children to be admitted to the regular weekly day-care program. Expansion of this facility is planned to allow capacity for 36 additional children. The second child care center at the Weapons Station provides drop-in care for as many as 72 children (Arnold 1994).

These Navy-operated programs provide child care for a fraction of the cost of privately run programs. Those eligible to enroll include children of active-duty military personnel (including personnel from other military installations in the Charleston area) and DoD-employed civilians of the Charleston Naval Station, Shipyard, and Weapons Station.

3.11.3 Recreational Facilities

There are numerous indoor and outdoor recreational facilities at Charleston Naval Base. These include two gymnasiums (Buildings 180 and 46), complete with basketball courts, weight rooms, saunas, a racquetball court, and other exercise equipment. In addition, the Navy Racquet and Fitness Club (Building 670) features five racquetball courts, a fitness room, whirlpool, pro shop, locker room, and saunas.

Sea Lanes Recreational Center (Building 644) is a 48-lane bowling alley with a pro shop, lounge, snack bar, and game room. There is one 50-yard, eight-lane indoor swimming pool (Building 92) and three outdoor swimming pools at the Base. In addition, the Cooper River Center (Building 86) provides indoor banquet facilities for up to 400 people. In support of hobbies, the station maintains two woodworking shops (Buildings 1245 and 1405), an auto hobby shop (Building 1508), and a 26,000-volume library (Building 46).

Outdoor recreational opportunities are provided by six softball/baseball fields, three football fields, a running track, 10 tennis courts (six lighted), three 1.5-mile jogging courses, a 10-station outdoor fitness trail, and numerous picnic shelters. The Naval Station Marina (Building 682) provides sailboat, motorboat and equipment rentals for water-based recreation. The Navy also operates a par 57, 18-hole golf course, Indigo Plantation, at the north end of the Naval Base.

In 1993, participation rates were tabulated for selected facilities. These totals, based on number of people served, were 17,304 for the golf course, 65,964 for the racquet and fitness club, 124,060 for the bowling alley, 98,611 for the two gymnasiums, 55,506 for the library, 20,046 for the marina, 37,382 for the four swimming pools, 14,753 for the auto hobby shops, and 33,720 for the Cooper River Center banquet facility (Department of the Navy, Naval Station Charleston, Department of Morale, Welfare, and Recreation, 1993).

Active duty Navy personnel and visiting ship personnel are given first priority for use of the recreational facilities. Others are eligible to use the facilities on a non-interfering basis (in descending order of priority): dependents of active-duty personnel, retired active-duty personnel and their dependents, and DoD-employed civilians (Clement 1994).

In 1993, an inventory of City of North Charleston community parks and recreation facilities was compiled for the area surrounding the Charleston Naval Base. The area inventoried generally encompasses the Chicora, Cherokee, Charleston Farms, Park Circle, Liberty Hill, Ferndale, Morningside, Russeldale, Deas Hill, and Union Heights neighborhoods in the area extending from the Naval Base to route I-26 to the west and Route I-526 to the north (Sasaki Associates, Inc., 1994). This inventory identified 20 park and recreation facilities, including community centers, armories, senior citizen centers, playgrounds, and ballfields in the vicinity of the Naval Base.

The City of North Charleston Recreation Department has identified a need for recreational facilities for residents of the adjacent Chicora-Cherokee neighborhood (Barfield January 7, 1994). It is the intent of North Charleston to provide recreational opportunities for residents of these neighborhoods, and the city has requested a total of 14 existing Naval Base recreational facilities including playing fields, an indoor swimming pool, tennis courts, and picnic shelters totaling 167,613 square feet be distributed throughout the complex (Sasaki Associates, Inc., 1994: City of North Charleston request for space). A total of 59 were identified as potentially usable by the recreation (Barfield 1994).

3.11.4 Emergency and Medical Services

Fire Services

First response to fire emergencies at the Charleston Naval Base is currently provided by three NAVSTA fire stations, located at the Reynolds Avenue gate (Station Number 1), at the Turnbull Avenue and Avenue D intersection (Station Number 2), and at the Hobson Avenue and Viaduct Road intersection (Station Number 3). In addition, the NAVSTA Fire Department provides ambulance and emergency medical treatment services for on-base emergencies. The NAVSTA fire department has mutual-aid agreements with the surrounding municipalities, including the cities of North Charleston, Charleston, Hanahan, and St. Andrews.

The NAVSTA Fire Department functions as a paramilitary operation and consists primarily of paid professional fire fighters with a smaller number of military personnel. The operation requires 11 on-duty fire fighters per day, and achieves a maximum response time of 4.5 minutes for on-base emergencies (Stynchcomb 1994). Equipment includes an 85-foot aerial ladder, three pumper trucks, and one reserve truck.

In the first quarter of 1994, the NAVSTA Fire Department responded to 177 calls: 12 fires, 59 false alarms, and 106 miscellaneous responses. In addition, emergency personnel responded to an average of 21.3 emergency medical assistance calls per month during the same period (Charleston Naval Station Fire Department 1994).

After the Naval Base is closed, the City of North Charleston will acquire the responsibility for first-response fire protection on the property. The City of North Charleston operates six fire stations in its jurisdictional area. Of the six city fire stations, two are located within 2 miles of Charleston NAVSTA: Station No. 1 (Jenkins Avenue) and Station Number 2 (2006 Reynolds Avenue).

The equipment used by the City of North Charleston Fire Department includes six frontline pumpers, one 110-foot ladder truck, one 75-foot elevated platform, four mini-pumpers of 250-gpm capacity, three response pumpers with capacities of 1,000 to 1,500 gpm, one service truck, and one hazardous materials response vehicle.

In addition to providing first response in the city's 53-square-mile service area, the North Charleston Fire Department has mutual-aid agreements with Charleston NAVSTA and all cities and military bases in the Trident Region. In 1993, the North Charleston Fire Department received 3,200 calls for emergency service, reportedly the third-highest total in the state of South Carolina (Rissanen 1994).

The City of North Charleston has requested to reuse the three fire stations located on the Base to augment fire protection services in the city (Rissanen 1994).

Medical

The Charleston Naval Hospital provides medical, surgical, and outpatient health care services to the entire Charleston naval community, as well as to other local military service branches. This 10-story, 110-bed facility is located at Rivers and McMillan avenues. It was accredited in 1989 by the Joint Commission on Accreditation of Health Care Organizations. Hospital services available include a 24-hour emergency room, 12 surgical facilities, and 32 different medical specialties. In addition, the hospital operates three branch clinics for outpatient care at the Naval Station, Naval Shipyard, and the Naval Weapons Station. The hospital and three clinics employ 1,260 medical professionals, including 710 military personnel and 550 civilians (Gimbel 1990).

In 1993, the average daily patient load in the hospital was 72, and total admissions numbered 7,126. This represents a 31% reduction in inpatient care workload over the previous two years, in which average daily patient loads were 93 (in 1992) and 104 (in 1991) and total admissions were 9,521 and 10,416, respectively. However, during the same three-year period, the number of outpatient visits to the hospital increased by 11%, from 255,983 in 1991 to 284,265 in 1993. In the NAVSTA and Shipyard branch medical clinics, the number of outpatient visits fell 31% to 24,569 (NAVSTA) and 64% to 15,778 (Shipyard) from 1991 to 1993 (Etienne 1993).

The hospital and clinics serve active-duty and retired active-duty military personnel, their dependents, and widows/widowers of former active-duty personnel. Those requiring specialized treatments may be referred to one of the seven local civilian hospitals such as Baker Hospital or Charter of Charleston Hospital, or to Bethesda Military Hospital in Maryland.

Dental

The Charleston Naval Dental Center, located in Building 675 at the south end of the Naval Base, is one of 23 major Navy dental commands throughout the world. The center provides all routine and 24-hour emergency dental services to active-duty Navy personnel, with retired active-duty personnel served on a standby basis, and dependents served only in emergencies. The dental center is staffed by 24 dental officers, two Medical Service Corps Officers, 40 Dental Technicians, and 23 civilian personnel (Croxtan 1994). In addition, the command operates a branch clinic at the Naval Weapons Station.

In FY 1993 (October 1992 through September 1993), a total of 31,229 patients were treated at the dental center. In the six months beginning in October 1993 through March 1994, 12,745 patients were treated (Croxtton 1994).

3.11.5 Security Services

Security and law-enforcement services at the Base are provided by the NAVSTA Security Department based in Building M-82. Approximately 142 civilian and 31 military law enforcement personnel are employed in shifts to provide security at the entrance gates and the Naval Hospital, provide traffic control, and to conduct patrol activities throughout the Base.

The department maintains and uses a complete communications and security system that monitors the entire Base, with backup generators for use during emergency situations. In addition, the department uses two 24-foot security boats, 14 automobiles, 15 pickup trucks and utility vehicles, three minivans, and three 15-passenger vans to provide base security services.

In 1993, the NAVSTA Security Department responded to 1,391 security calls, including incidents, traffic accidents, and transport of Navy personnel from local jails back to the Base. In 1992, the department responded to 1,906 calls (Massey 1994).

The department has mutual-aid agreements with most of the surrounding towns and cities. However, the need for outside police help is rare (Massey 1994). Similarly, the neighboring City of North Charleston has not had to rely on the NAVSTA Security Department for assistance in law-enforcement activities (Calwell 1994). However, the departments do collaborate on some police detective work by sharing criminal files and providing assistance through Naval Investigation Services (NIS).

The City of North Charleston will acquire responsibility for providing law-enforcement and security on the Base immediately after final closure in 1996. The North Charleston Police Department currently has a service area of 52 square miles, including all of North Charleston and a small area outside of the city. Currently, the department operates with 173 police officers, providing a ratio of approximately 2.4 officers to every 1,000 city residents (Calwell 1994). In addition, the department was recently awarded a federal grant that will allow it to hire 10 additional police officers (BEST 1994). The City of North Charleston has two police facilities in the study area: Police Headquarters at City Hall and the South Precinct Substation located at 3374 Rivers Avenue (Sasaki Associates, Inc., 1994). In 1993, the City of North Charleston Police Department responded to approximately 122,000 calls.

Requests have been submitted for reuse of the NAVSTA's security system, buildings, and equipment for multijurisdictional law-enforcement complexes. Requests were submitted by the City of North Charleston Police Department, the South Carolina Highway Patrol, Department of Public Safety, and South Carolina Police Academy. In general, the requestors envision use of the facilities for personnel training and use by law-enforcement agencies from local, state, and federal jurisdictions.

3.11.6 Human/Community Service Providers

The process of U.S. military base closure under BRAC incorporates provisions to ensure that the human and community services needs of the region are addressed. In 1987, the Stewart B. McKinney Homeless Assistance Act was adopted. Title V of this act requires the DoD to give homeless uses top priority of consideration over other uses for surplus federally owned buildings and land (including base closure properties). If these buildings and land are determined to be suitable and available, and if it is determined that no other Federal agency has need of them, then use for the homeless is to be seriously considered (BEST 1994).

The Trident Region's McKinney Act Task Force was formed to consolidate and coordinate more than 75 of the area's public agencies eligible under the act to collectively identify Naval Base facilities and property for use by the homeless.

In 1992, the Trident United Way identified several human needs deficiencies for the region, including a short supply of affordable housing, acute need for shelter for abused children, the lack of transportation to human services locations, the need for affordable health care, concern about education, and that people have difficulty in meeting basic needs (BEST 1994).

The McKinney Act Task Force, cooperatively with the BEST Committees planning process, has developed a reuse plan for selected facilities at the Naval Base to benefit the homeless. This plan identifies development potential for public agency programs in 37 buildings in three general areas of the Base. It proposes the concentration of noncongregant housing and child development activities in the northern portion of the Base, in and around the area intended for Class A office development; the use of warehouse facilities in the central portion of the Base adjacent to the controlled industrial area; and development in the southern portion of the Base for integrated service and medical facilities and congregant housing (BEST 1994). See Appendix B for a detailed summary of McKinney Act Task Force requests.

The National Civilian Community Corp (NCCC) is a federal government corporation charged with relieving the source of the pressure on local governments, school boards, and

nonprofit charitable organizations by providing civic and community service programs. NCCC currently has classrooms in Building 61 and a residence dormitory in Building 676, and requires administrative space and dining facilities. NCCC has been a non-DoD tenant at the Base since July 1994.

In addition to human service providers, NCCC also provides important community services.

3.12 Cultural Resources

3.12.1 Archaeological Resources

In January 1993, the Environmental Resources Planning Section of the Mobile District, U.S. Army Corp of Engineers, completed the *Historic Properties Survey, Naval Base Charleston, Charleston County, South Carolina* report documenting limited archaeological subsurface testing that was conducted between Everglades Drive and Pine Avenue in the Officers Housing area. The testing resulted in the discovery of three prehistoric artifacts (ceramics). These materials originated from test pits established between Everglades Drive and Officers Quarters (U.S. Army Corps of Engineers 1993). Although this report did not analyze the archaeological sensitivity of the entire facility, it stated that the location of site 38CH1496 is the "only area remaining of archaeological concern..." (U.S. Army Corps of Engineers 1993).

On December 10, 1993, the South Carolina Department of Archives and History (SCDAH) determined that the site (38CH1496) was potentially eligible for the National Register of Historic Places (NRHP) (Tippet 1993). SCDAH also stated: "We agree with your assessment that only a few areas escaped industrial development. The probability that significant intact archaeological deposits exist in the highly industrialized areas of the Base is low." (Tippet 1993).

In 1995, the Navy completed a report entitled *Archaeological Sensitivity Assessment for the Disposal and Reuse of Charleston Naval Base, South Carolina* (Department of the Navy 1995), which contains a quantitative and qualitative analysis of the alteration of the surficial deposits of the Base from 1901 to 1994. The report addresses the impact to subsurface archaeological resources as a result of surface downcutting and grading; construction of buildings, streets, roads, railroads, and parking lots; excavation of subsurface trenches for sanitary and storm sewers, water mains, and electrical conduits; and dredging and deposition of dredged material.

The report concludes that the surficial alteration that has taken place during the Navy's tenure has been so severe that any subsurface archaeological deposits have either been destroyed or sustained a critical loss of integrity and are therefore not eligible for NRHP.

3.12.2 Historical Structures

In January 1994, R. Christopher Goodwin and Associates, Inc., (RCGA 1994) completed a report entitled *Inventory, Evaluation and Nomination of Military Installations: Naval Base Charleston, Vol. I & II* (1994). This report contains a comprehensive analysis of the facility's architectural landscape and postulates the existence of historical districts and individual structures eligible for the NRHP. Upon review by the SCDAH, the district's boundaries and contributing and noncontributing elements were defined more precisely (Edmonds 1994).

It has been determined that three historical districts within Charleston Naval Base boundaries currently are NRHP-eligible: the Officers' Housing Historic District, Naval Hospital Historic District, and Naval Shipyard Historic District. These districts are composed of 113 contributing structures. Three individual structures—Building 590-A (Coast Guard Air Station/Bachelor Officers' Quarters), Building 1179 (Chapel), and Building M-17 (Marine Corps Barracks)—also have been determined to be NRHP-eligible (see Figures 3-14, 3-15, and 3-16).

3.13 Environmental Aspects

3.13.1 Installation Restoration Program

As part of the Navy Assessment and Control of Installation Pollutants (NACIP) program, the Navy submitted an Initial Assessment Study (IAS) in May 1993 and a Confirmation Study (CS) in October 1992 (U.S. Department of the Navy 1994). The NACIP program is part of the DoD Installation Restoration Program (IRP), which satisfies requirements under the Superfund program authorized by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The purpose of the IAS and CS was to identify sites at the Charleston Naval Base where former waste storage, handling, and disposal practices may pose a risk to human health or the environment (U.S. Department of the Navy 1994).

Following NACIP activities, a RCRA Facility Assessment (RFA) was initiated as a requirement of the RCRA Part B permit. The RFA was designed to evaluate releases of hazardous waste or hazardous constituents to the environment and to implement corrective actions, when necessary, under the authorities of the Resource Conservation and Recovery

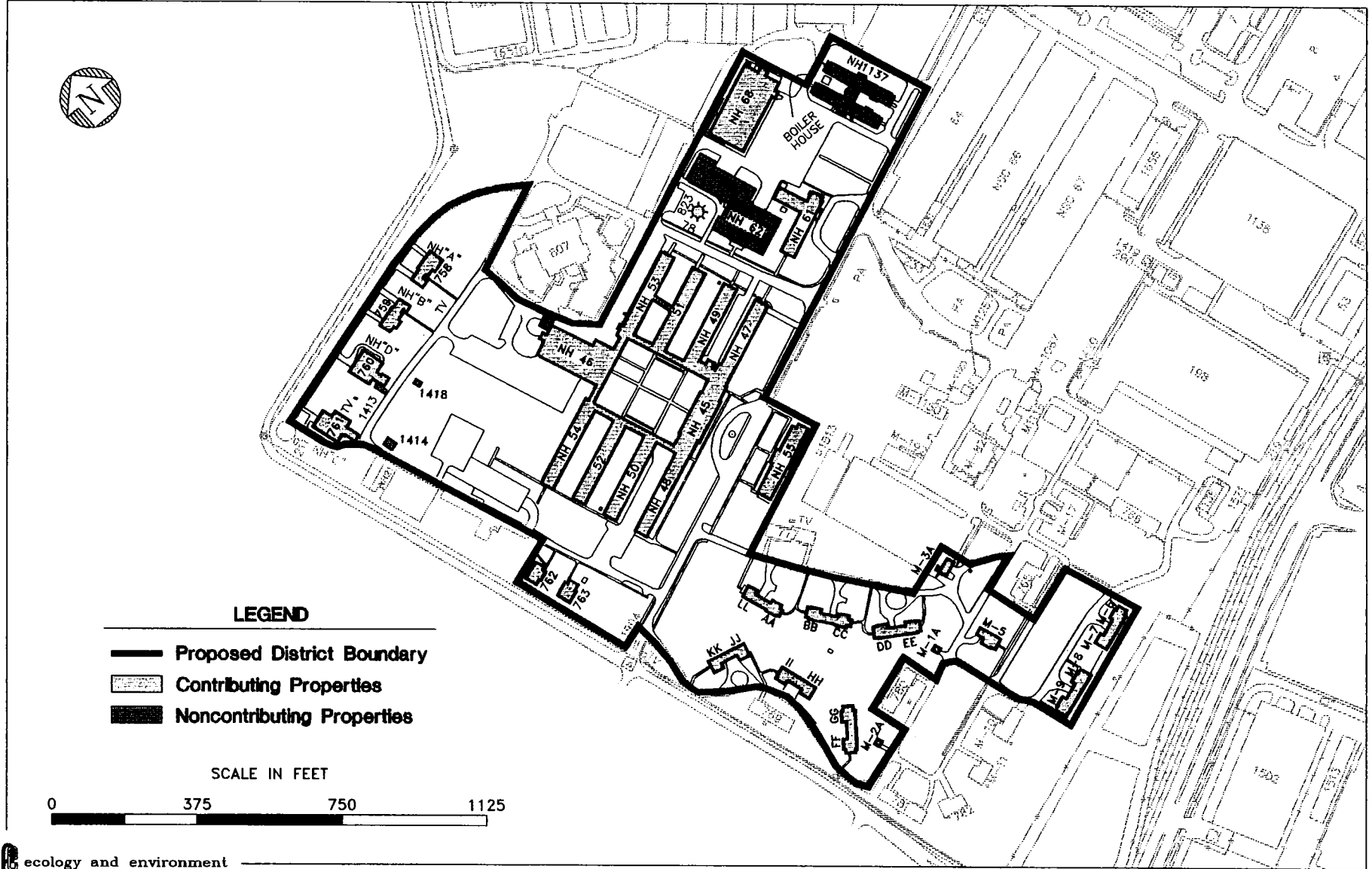


Figure 3-14 PROPOSED NAVAL HOSPITAL HISTORIC DISTRICT



Figure 3-15 PROPOSED OFFICER'S HOUSING HISTORIC DISTRICT

Act (RCRA) and the 1984 Hazardous and Solid Waste Amendments (HSWA). The RFA identified information on solid waste management units (SWMUs) and areas of concern (AOCs) at the Base, evaluated the potential for release to the environment, and determined the need for further investigation (U.S. Department of the Navy 1994).

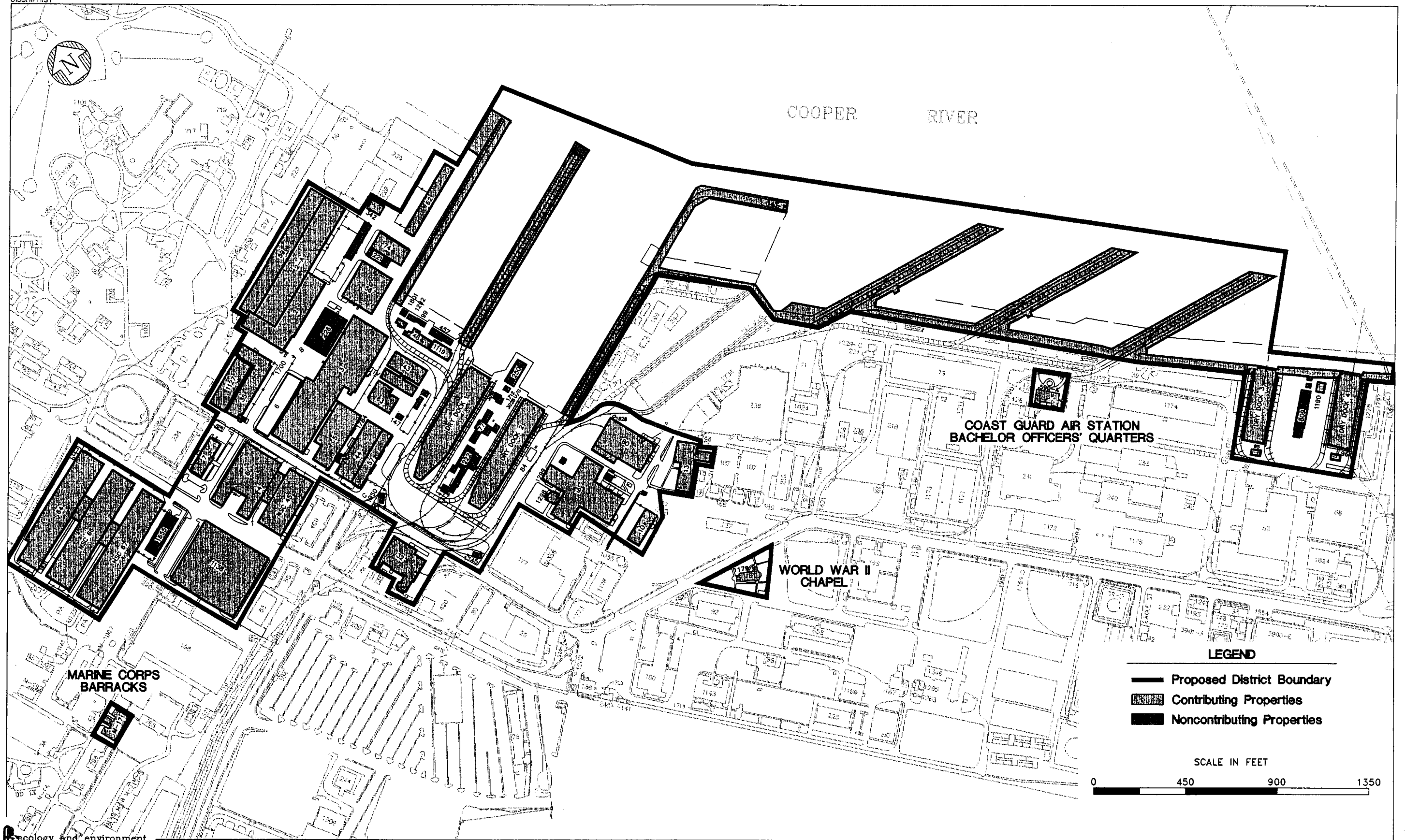
A RCRA Facility Investigation (RFI) is being conducted to identify the source and nature of contaminants and the rate and extent of their migration through the environment. Concurrently, a Risk Assessment (RA) is being conducted to determine the risk that these contaminants pose to human health and the environment. A Corrective Measures Study (CMS) will soon begin to evaluate various potential corrective measures (cleanup methods, or presumptive remedies) and identify a few that offer the best potential for various hazardous waste sites at Naval Base Charleston. Upon completion of the RFI, RA, and CMS, a public meeting will be held to discuss the results of the RFI, RA, and CMS and to obtain public views on the various proposed corrective measures. The Navy and EPA will consider the public's input and select the corrective measure to be used at each hazardous waste site.

A SWMU includes any unit that has been used for the treatment, storage, or disposal of solid waste at any time, irrespective of whether the unit is or ever was intended for the management of solid waste. RCRA-regulated hazardous waste management units are also SWMUs. SWMUs include areas that have been contaminated by routine and systematic releases of hazardous waste or hazardous constituents, excluding one-time accidental spills that are immediately remediated and cannot be linked to solid waste management activities, such as product or process spills (EPA 1994).

An AOC includes any area having a probable release of a hazardous waste or hazardous constituent that is not from a SWMU and is determined by the EPA Regional Administrator to pose a current or potential threat to human health or the environment. AOCs may require investigation and remedial action under Section 3005(c)(3) of RCRA and 40 CFR part 270.32(b)(2) in order to ensure adequate protection of human health and the environment (EPA 1994).

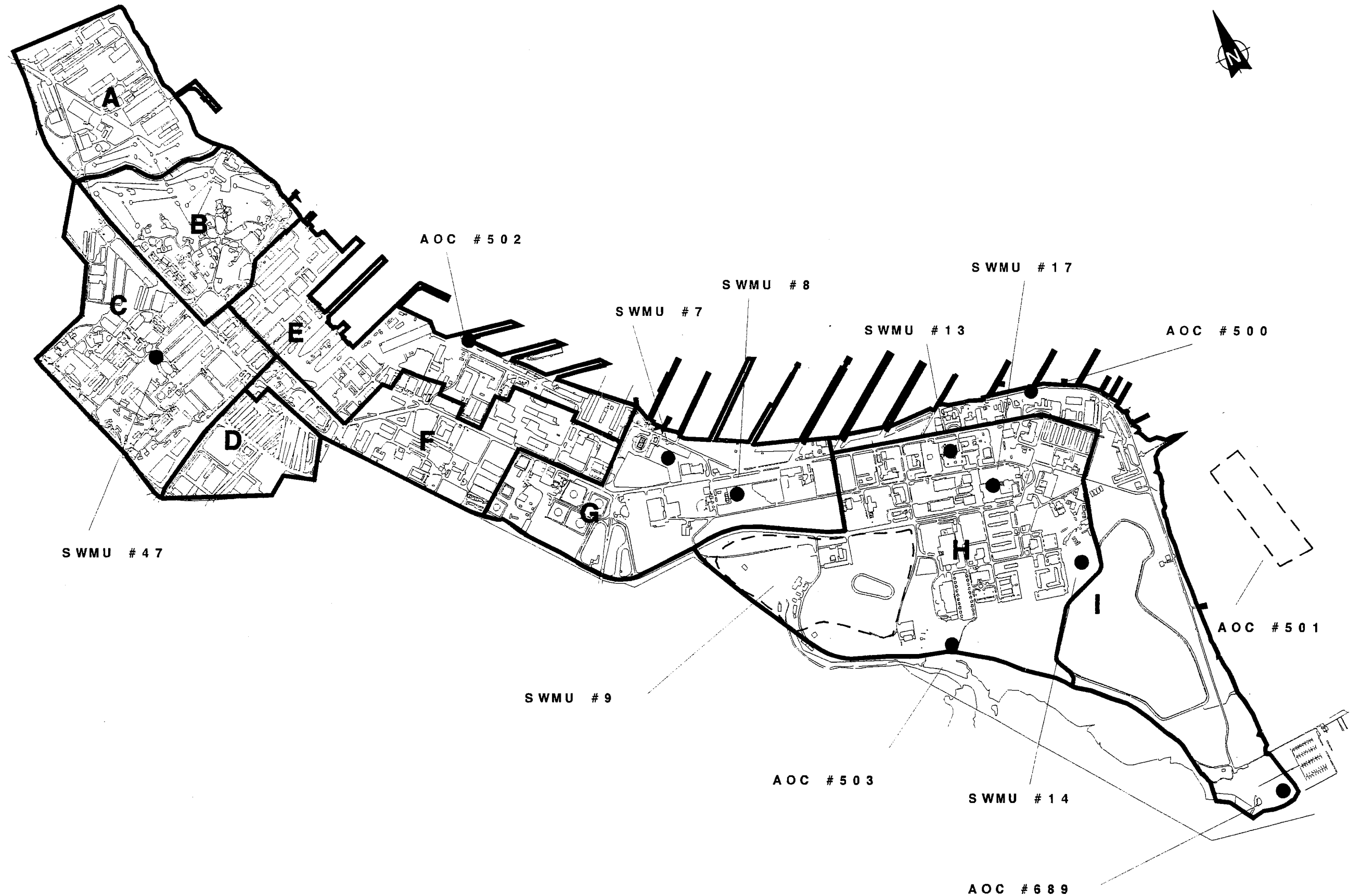
A total of 195 SWMUs (numbered 1 through 195) and 204 AOCs (numbered 500 through 704) have been identified at the Naval Base. Descriptions of SWMUs and AOCs located at the Base are provided in Appendix E as Table E-1 and Table E-2, respectively. The BRAC Cleanup Team (BCT) has divided the Base into 12 zones (A through L), which contain all of the SWMUs and AOCs (U.S. Department of the Navy 1994). The zone boundaries are shown on Figure 3-17 and are described below:

- **Zone A:** This zone is located at the extreme northern portion of the main base and includes all base areas north of Noisette Creek. SWMUs 1, 2, and 38 through 43 and AOCs 505 and 506 are located in this zone (U.S. Department of the Navy 1994).
- **Zone B:** Zone B encompasses the Base golf course and senior officers housing areas and AOCs 502 and 508 (U.S. Department of the Navy 1994).
- **Zone C:** This zone consists of administrative areas, additional housing areas, warehouses, and the Base coal pile. Zone C contains SWMUs 44 through 49 and 136 and AOCs 509 through 523 and 700 (U.S. Department of the Navy 1994).
- **Zone D:** Zone D consists of property and facilities between Reynolds Avenue and McMillan Avenue. It contains primarily parking areas and warehouses. Zone D contains SWMUs 50 through 52 and AOC 524 (U.S. Department of the Navy 1994).
- **Zone E:** This zone is located on the waterfront and includes the Shipyard Controlled Industrial Area. This zone contains SWMUs 5, 18, 21, 22, 23, 25 through 28, 30 through 33, 53 through 106, 143 through 157, 163 through 173, 179 through 185, and 187 through 193. AOCs 525 through 605, 701, and 702 also are located in this zone (U.S. Department of the Navy 1994).
- **Zone F:** This zone is located in the central portion of the Base, and includes the area surrounded by Hobson Street, Carolina Street, the eastern base boundary, Wood Street, and 11th Street. Facilities within this zone include both the existing and former public works areas. This zone contains SWMUs 4, 36, 107 through 116, 174, and 175. Zone F also contains AOCs 606 through 621 (U.S. Department of the Navy 1994).
- **Zone G:** Zone G also is located in the central portion of the Base, and includes the FISC petroleum facilities and the Chicora Tank Farm. The Chicora Tank Farm is not located on the Base, but is approximately 0.5 miles east of the Base. However, it is included in Zone G because it is connected to the Base via pipeline easements. This zone contains SWMUs 3, 6 through 8, 10, 11, 24, 29, 34, 35, 117 through 120, and 158. Zone G also contains AOCs 622 through 647 (U.S. Department of the Navy 1994).
- **Zone H:** This zone is located at the southern end of the Base. It contains properties identified for the State Department, as well as Naval support activities, training areas, and administrative areas. This zone contains SWMUs 9, 13, 14, 15, 17, 19, 20, 121 through 138, 159, 176, and 178. Zone H also contains AOCs 503 and 648 through 670 (U.S. Department of the Navy 1994).
- **Zone I:** Zone I includes the remainder of the southern end of the Base. It includes the waterfront property from Halsey Street to the



ecology and environment
Source: U.S. Department of the Navy 1985

Figure 3-16 PROPOSED NAVAL SHIPYARD
HISTORIC DISTRICT



SOURCE: Department of the Navy, April 19, 1994.

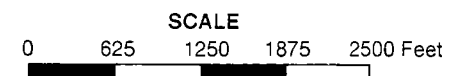


Figure 3-17 SELECTED HAZARDOUS WASTE SITES
AT CHARLESTON NAVAL BASE
WITH OVERLYING RFI ZONES

southern tip of the Base. This zone contains SWMUs 12, 16, 139 through 142, 160, and 177. It also contains AOCs 671 through 690 (U.S. Department of the Navy 1994).

- **Zone J:** This zone includes all of the water bodies on base such as the creeks, wetlands, and the Cooper River. Zone J also contains AOCs 500 through 502, 691, and 692 (U.S. Department of the Navy 1994).
- **Zone K:** This zone comprises additional noncontiguous properties (the Short Stay Recreational Facility, the antenna site on Sullivan's Island, the Naval Annex, and the downtown degaussing facility in downtown Charleston). SWMUs 162 through 167 and AOCs 693 through 695 also are located in this zone (U.S. Department of the Navy 1994).
- **Zone L:** This zone consists of the sanitary sewer system and storm-sewer system (U.S. Department of the Navy 1994), including AOC 699.

RCRA interim status closures have been performed on the process tanks at SWMU 25, the Defense Reutilization and Marketing Office (DRMO) Staging Area (SWMU 1), the Public Works Storage Yard (SWMU 6), and at the Old Paint Storage Center (Waste Paint Storage Pad, SWMU 21) (Brasel 1994).

The Navy completed the fieldwork portion of the Environmental Baseline Survey (EBS) in April 1994 at the Base to document impacts to the facility resulting from the storage, use, and disposal of hazardous substances and petroleum products at the installation, and to establish a baseline for use by the Navy in making decisions concerning real property transactions (U.S. Department of the Navy 1994). Information available from the Draft EBS has been incorporated into this EIS.

USEPA decided in 1993 that the Charleston Naval Base was not a National Priorities List (NPL) candidate because of the lack of observed releases as defined in the Hazard Ranking System (HRS) and because the Base was being remediated under RCRA. If future data or information develops that documents an observed release or the potential for an observed release, USEPA may reevaluate the Base under the HRS (Fielding 1994).

3.13.2 Hazardous Waste and Waste Management

The responsibility for the basewide regulatory compliance with state and federal hazardous waste management regulations belongs to the commander of the Charleston Naval Shipyard (CNSY), as owner of the RCRA facility Part B Permit. CNSY currently operates two hazardous waste storage facilities, Buildings 246 and 1640, under a SCDHEC-issued

RCRA operating permit that became effective on June 4, 1990, and is scheduled to expire on June 4, 1995. A renewal of this permit was submitted to SCDHEC on December 12, 1994 for continued operation of these facilities. Building 246 is used exclusively to store mixed waste (hazardous waste that is also radioactive). Building 1640, which is operated by CNSY for the Naval Base as a whole, is the storage facility that handles the majority of hazardous waste generated at the Base. A revised RCRA Part B permit for storage of mixed waste in Building 246 was approved by SCDHEC on June 3, 1994. The Navy plans to remove all the mixed waste from Building 246 and dispose of it in accordance with the Federal Facilities Compliance Act (FFCA). Detailed surveys will be performed to verify the removal of radioactivity from Building 246 as discussed in Section 3.13.7 and 4.13.5.5.

Hazardous wastes generated at the Base include paint wastes, spent solvents, contaminated acid/alkaline cleaning solutions, contaminated preservative compounds, unusable lead dross, and sludge from the electroplating shop wastewater pretreatment facility. Satellite accumulation areas at the Base consist of 55-gallon drums used to store hazardous wastes. These drums are transported to the Building 1640 storage facility prior to being filled to capacity. From Building 1640, drums are transported to a permitted treatment, storage, and disposal facility (TSDF) for final disposal. Storage at the less-than-90-day storage areas is temporary and cannot exceed 90 days from the time the waste begins to accumulate (U.S. Department of the Navy 1994). Satellite accumulation areas (SAA) have been identified as SWMUs and are listed on Table E-1 in Appendix E.

The Charleston Naval Base also has instituted a hazardous waste minimization program in accordance with the RCRA Part B permit. This program meets the requirements of OPNAVINST 5090, which establishes a Navy-wide policy for a five-year, 50% reduction of hazardous waste generation by weight. The primary means of hazardous waste reduction include avoidance of hazardous waste generation, hazardous waste recycling, and neutralization. The primary waste streams identified for minimization are shown in Table 3-28

Approximately 50,000 cubic yards of nonhazardous solid waste is generated at the Base each year. The majority of solid waste generated at the Base currently is transported off base for disposal at the local county landfill. On-base recycling programs are in place for the collection of paper, aluminum, and metals. In the past, solid wastes were disposed in the landfill on base. This landfill is currently closed and is being investigated under the RFA/RFI process for potential environmental impacts (U.S. Department of the Navy 1994).

<p align="center">Table 3-28</p> <p align="center">WASTE STREAMS HAVING WASTE MINIMIZATION PRIORITY</p> <p align="center">AT CHARLESTON NAVAL BASE,</p> <p align="center">SOUTH CAROLINA</p>	
Waste	Annual Quantity by Weight (lbs.)
Paint	292,836
Acids (as a group)	34,056
Cleaning Compounds	33,676
Absorbent, Spill Residue	25,300
Trichlorotrifluoroethane (Freon 113)	25,225
Rudder Preservation (Petroleum tar)	21,765
Adhesives (Sealants, Fillers, etc.)	9,070
Lead Dross (Scrap, Clothing, etc.)	8,140
Plating Sludges	7,225
1,1,1-Trichloroethane	2,215

3.13.3 Underground and Aboveground Storage Tanks

Approximately 150 existing or former regulated and unregulated underground storage tanks (USTs) and approximately 50 existing aboveground storage tanks (ASTs) have been identified at the Base (Hutto 1994). These totals are estimates because of the lack of records for older tanks. The USTs and ASTs are listed according to their use in Appendix E Tables E-3 and E-4, respectively. The Charleston Naval Base plans to remove or screen for transfer all USTs and ASTs listed in the EBS (Hutto 1994).

UST closure and investigation activities on properties at the Base are conducted under the SCDHEC UST program (Mettlen 1994). South Carolina has no AST regulations; therefore, federal Spill Prevention Controls and Countermeasures (SPCC) regulations (40 CFR 110 and 40 CFR 112) are applicable for ASTs. The Navy's UST program complies with all federal, state, and local regulations (Mettlen 1994).

When a release from a regulated or unregulated UST occurs, the UST is investigated under SCDHEC UST regulations (Mettlen 1994). The Navy addresses the corrective action requirements in the following four phases: Phase 1—Preliminary Contamination Assessment; Phase 2—Contamination Assessment; Phase 3—Remedial Action Plan; and Phase 4—Remedial Action (Hutto 1994). The Navy's general protocol for investigating and remediating leaking

regulated and unregulated USTs found on base includes taking the UST out of service, removing the tank contents, removing the tank, sampling soil in the excavation, sampling groundwater from borings drilled within the excavation, and submitting a Closure Report to SCDHEC (Hutto 1994).

SCDHEC establishes recommended action levels in soil for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and lead on a case-by-case basis (Mettlen 1994). The action level for each site is based on the land use in the vicinity and on requirements for protecting the aquifer beneath the site from contamination. The TPH action levels in soil are typically 100 ppm with a cleanup goal of 10 ppm (Hutto 1994). The recommended action levels in groundwater for BTEX and lead generally are established at the Maximum Contaminant Levels (MCLs) established by USEPA (Hutto 1994). The MCLs for these compounds are: 0.005 mg/L for benzene, 0.7 mg/L for ethylbenzene, 1.0 mg/L for toluene, and 10 mg/L for xylenes. The action level for lead is 0.015 mg/L (USEPA 1994).

Contamination assessments have been completed for USTs at the Fleet and Mine Warfare Training Center (FMWTC), the Naval Reserve Training Center (NAVRESCTR), and the Chicora Tank Farm (Fontenot 1994). Contamination assessments currently are being conducted at USTs located at Building 1346 (Exchange Gas Station) and Building 661. Results from the completed assessments are summarized below.

Fleet and Mine Warfare Training Center (FMWTC) and Naval Reserve Training Center (NAVRESCTR)

In March 1993, the Navy conducted a contamination assessment of one UST (647A) and one former UST (643C) located at the FMWTC and two former USTs (RTC-1 and RTC-2) located at the NAVRESCTR (SECDI 1993a). The investigation included sampling of the soil and groundwater. The report prepared for this assessment indicated that the soil samples contained moderate concentrations of heavy oils; the highest concentration of oils was observed north of UST 647A at the FMWTC. All other petroleum hydrocarbons were present in concentrations below the detection limits. Concentrations of total petroleum hydrocarbons (TPH) (as high as 860 ppm) were detected in the soil collected from a boring near UST 647A at the FMWTC. Concentrations of TPH (as high as 2,500 ppm) were detected in soil collected from UST RTC-2 at the NAVRESCTR (SECDI 1993a).

As part of the investigation, three monitoring wells were installed at each of these two sites. Results of samples collected from these wells in 1993 indicated that naphthalene was the only hydrocarbon present in groundwater above the detection limits. Lead was detected at concentrations above the MCL in one well at the NAVRESCTR and in two wells

at the FMWTC. However, background levels of lead in groundwater also are high in the vicinity of the FMWTC and NAVRESCTR. A year of quarterly sampling was recommended at the FMWTC site to determine whether the lead concentrations in the groundwater will remain consistently higher than the background concentrations (SECDI 1993a).

Chicora Tank Farm

In April 1994, a Contamination Assessment report was prepared for an investigation of the Chicora Tank Farm (KESI 1994). The report summarizes analytical and field data collected from four quarterly groundwater monitoring events and sediment sampling at the underground petroleum tank farm, which consists of six fuel storage tanks that are covered with 3 to 5 feet of soil. Currently, all of the tanks are closed and not in use. The tanks have capacities ranging from 27,000 barrels (bbl) to 50,000 bbl. All of the tanks were used to store No. 6 fuel oil except tank O, which stores waste oil. Each tank is approximately 25 feet high and is constructed of reinforced concrete walls and a domed roof. The tank exteriors are coated with 3 inches of gunite to minimize leakage of contents into the groundwater. Each tank is connected to a pump room, which measures approximately 23 feet by 24 feet by 27 feet (KESI 1994).

The tanks also are connected to a subsurface drainage system that discharges into a spill containment pond located on the northwest portion of the property. All water that enters the pond bypasses an inoperable oil skimmer and flows through a drainage ditch into the marshy tidal slough adjacent to the northern boundary of the site. The drainage ditch and the pond are lined with 30-mil polyethylene. Eleven monitoring wells were installed at the site in June 1990 at depths of approximately 17 feet BGS (KESI 1994).

The Navy concluded in a 1994 report that the highest concentrations of petroleum constituents were found in soils and sediment in the spill containment pond. Benzene and total xylenes were the only constituents detected in the groundwater collected from monitoring wells. Benzene was found in monitoring well No. 2 (MW-2) at a concentration of 0.006 mg/L, and xylenes were found in MW-4 at a concentration of 0.007 mg/L. A petroleum sheen was observed on groundwater recovered from MW-3 and MW-9. Heavy-fraction hydrocarbons were detected in the groundwater collected from the french drain network. TPH concentrations of 2 micrograms per liter ($\mu\text{g/L}$) to 470 $\mu\text{g/L}$ were detected in groundwater collected from the french drain manholes. Free-phase petroleum was observed in one of the manholes during collection of the groundwater samples. Total polynuclear aromatic hydrocarbons (PAHs) also were detected in one french drain manhole at a concentration of 0.018 mg/L (KESI 1994).

BTEX, PAH, and TPH were found in sediments collected at the spill containment pond. TPH was found at concentrations as high as 1,200 milligrams per kilogram (mg/kg) at this location. According to the Contamination Assessment report, remediation of the sites, including pond sediment and groundwater, will be conducted in conjunction with the permanent closure of the tanks (KESI 1994).

The Navy will determine whether remedial actions are necessary following the completion of these assessments. A complete list of UST remediation projects currently underway at the Base have been included in Table 3-29.

Approximately 20 USTs have been abandoned and 12 USTs have been removed at the Base (U.S. Department of the Navy 1994). Several additional USTs also are currently being removed at the Base. Table E-3 in Appendix E provides information about these former USTs, including information about their abandonment, past and present investigations, and when contamination was found. In addition to the USTs, approximately 12 ASTs have been removed at the Base. Groundwater that is contaminated by both IRP sites and UST wastes will be evaluated and remediated under the IRP program (U.S. Department of the Navy 1994).

3.13.4 Asbestos

DoD policy with regard to asbestos-containing material (ACM) is to manage ACM in a manner protective of human health and the environment and to comply with all applicable federal, state, and local laws and regulations governing ACM hazards.

Therefore, unless it is determined that the ACM in the property poses a threat to human health at the time of transfer, all property containing ACM at the base will be conveyed, leased, or otherwise disposed of.

Five asbestos surveys have been conducted in the past to locate friable ACM at the Charleston Naval Base. The surveys have concentrated on thermal system insulation, sprayed-on/troweled-on fireproofing, and acoustical insulation (U.S. Department of the Navy 1994). In addition, an asbestos survey is currently underway at housing areas on the Base. Information about friable asbestos or suspected friable asbestos in the buildings surveyed is listed on the Building Inventory table in Appendix D. The 1994 EBS includes a review of the status of accessible friable asbestos previously identified, as well as a preliminary identification of possible ACMs noted during the walk-through process; however, the EBS did not include a formal asbestos survey (U.S. Department of the Navy 1994).

The Shipyard Public Works Department has completed several asbestos abatement actions through a series of contracts. Projects associated with this effort are listed in

<p align="center">Table 3-29</p> <p align="center">UST REMEDIATION PROJECTS AT CHARLESTON</p> <p align="center">NAVAL BASE, SOUTH CAROLINA</p>	
Project	Status^a
S003R/Removal of 10 Underground Storage Tanks (PW Project).	Funded for 1992 (\$17,000); Partially Funded for 1993 (\$38,000/\$245,000); Three Tanks Currently Removed (1279A, B, C); Seven Tanks Remain in Place.
UST Removal for building 1346 (PW Project).	Completed.
S068C/UST for Eight Tanks (PW Project).	Currently underway; All but two USTs (851 A & B) have been removed; Funded for 1991/1992.
S068D/UST Remedial Action for Leaking Tanks at Naval Station (PW Project).	Unfunded for 1993.
S084B/UST Remedial Investigation for Chicora Tank Farm.	Complete.
S084C/UST Remedial Action for Chicora Tank Farm.	Funded for 1992 and 1994; Completed monitoring only; DFSC Project.
S282C Follow-on/Remove UST 643B/UST Retrofit.	Not yet submitted; Not required if removed by 1998
S282D/UST Remedial Action for Tank at Building 647.	Monitoring only; Funded for 1992; Should award third quarter 1994.
S282E/UST Remedial Action for Soil Around Closed Tank at Building 647 (UST RI).	Completed.
S324E/UST Remedial Action for Soil Around Tank RTC 2.	Funded for 1992; Unfunded for 1993.
S324F/UST Remedial Investigation for Soil Around Tank RTC 2.	Completed.
PW# 1-0319/Building 4000, Remove 500-Gallon Diesel UST.	Completed 2/94.
PW# NSTA4-3038/Building X54, Removal and Disposal of AST.	PWD P&E for scoping estimate.

^a All information is current as of the Draft Environmental Baseline Survey submitted in April 1994.

Key:

UST = Underground Storage Tank.
 AST = Aboveground Storage Tank.
 RI = Remedial Investigation.
 RTC = Reserve Training Center.

Source: Department of the Navy 1994.

Table E-5 in Appendix E. These projects have not included asbestos-free certifications, but have significantly reduced the amount of friable asbestos in close contact with workers throughout the Base (U.S. Department of the Navy 1994). An active asbestos hazard abatement program is in place to abate and remove friable asbestos that is damaged and accessible to working personnel. The Navy will develop an asbestos hazard abatement plan that will include a description and location of ACM. The plan will be filed with SCDHEC for future occupants' use.

3.13.5 Lead-Based Paint

DoD policy is to manage lead-based paint (LBP) in a manner protective of human health and the environment and to comply with all applicable federal, state, and local laws and regulations governing LBP hazards. Before January 1, 1995, it was DoD policy to manage LBP at BRAC installations in accordance with either 24 CFR 35 or PL 102-550. The policy since then has been to manage LBP solely in accordance with PL 102-550. Also since January 1, 1995, the provisions of the Residential Lead-Based Paint Hazard Reduction Act of 1992 concerning the transfer of federal property for residential use have been in effect. These provisions, codified at 42 U.S.C. §4822, are applicable to target housing, which is housing constructed prior to 1978, with limited exceptions for housing for the elderly or persons with disabilities or any dwelling without bedrooms.

The inspection and abatement discussed above will not be required when the building is scheduled for demolition by the transferee, and the transfer document prohibits occupation of the building prior to the demolition, the building is scheduled for nonresidential use, or if the building is scheduled for residential use, the transferee conducts renovation consistent with the regulatory requirements for the abatement of lead-based paint hazards.

Effective January 1, 1995, DoD BRAC properties should be transferred in accordance with any regulations implementing the Residential Lead-Based Paint Hazard Reduction Act of 1992. The act also makes federal agencies subject to all federal, state, interstate, and local substantive and procedural requirements respecting LBP and LBP hazards (see 15 U.S.C. §2688).

A formal LBP survey, which would include analysis of paint on buildings, has not been conducted at Charleston Naval Base. However, the Navy assumes there is a greater possibility that LBP is present on structures constructed and/or painted prior to 1982 (Browder 1994). Therefore, the age of the buildings listed in the Building Inventory table in Appendix D indicates that LBP may be present on those buildings. The Navy is currently conducting a formal LBP survey of housing units on Base that will include analysis of paint

for lead on buildings where paint is cracked and peeling (Browder 1994). Deteriorated LBP that presents a potential health hazard in facilities that will be used as housing will be abated or treated in accordance with federal regulations and DoD policy in effect at the time of transfer.

3.13.6 Polychlorinated Biphenyls (PCBs)

Control of PCBs and PCB-contaminated materials is legislated by the Toxic Substances Control Act (TSCA) (40 CFR 761). The Navy initiated a program to inventory and replace PCB-containing equipment in 1978. This effort originally focused on PCB-containing electrical transformers and capacitors, but has grown to include the disposal of PCB-containing electric light ballasts and shipboard materials such as power cables and felt septum. A PCB audit/assessment for the Base was completed in January 1985. Since then, the items identified in the audit as containing PCBs have been systematically removed from service and disposed of (Ensafe/Allen & Hoshall 1994).

All the PCB-containing transformers have been removed from the Charleston Naval Base property.

Other facilities identified during the EBS as being associated with PCB-containing equipment are listed in Table E-6 in Appendix E. In addition, a number of SWMUs and AOCs exist that are associated with PCB transformer storage and maintenance areas. These SWMUs and AOCs have the potential for PCB spills and are identified in Tables E-1 and E-2 in Appendix E.

3.13.7 Radiological Issues

Naval Nuclear Propulsion Program (NNPP) Radioactivity

Nuclear-powered submarines and nuclear submarine tenders have been berthed at CNSY and Charleston Naval Base since the 1960s. CNSY began NNPP radioactive support work in 1961. Since the beginning of the Program, NNPP radioactive work has been performed under strict controls to preclude the spread of radioactivity. This radiological work has been performed only in specifically designated locations aboard vessels at CNSY and Charleston Naval Base piers, and within certain facilities at CNSY.

General Radioactive Material (G-RAM)

In addition to NNPP radioactivity, G-RAM has been used and stored in specifically designated locations in the Shipyard and at the Naval Station. The G-RAM includes radiographic sources used for nondestructive test purposes; sources used for instrument calibration; electrical instrumentation containing vacuum tubes with radioactive elements, radium dials and gauges; and naturally occurring radioactive materials such as potassium-40, thorium, and uranium and thorium daughter products.

Listing of NNPP and G-RAM Sites

Facilities at CNSY and Charleston Naval Base having a radioactivity potential associated with NNPP and/or G-RAM have been identified and categorized. This categorization was based on past and present use of the facilities, review of past radiological surveys, operating records, and interviews with senior employees. A list of these facilities is contained in Table E-7 of Appendix E. The type of work or storage is identified in the Radiological Designator column.

Mixed Waste

Mixed waste (waste that is both hazardous and contaminated with low-level radioactivity) has been generated during overhauling, repair, and inactivation of nuclear-powered ships. Despite largely successful efforts to minimize the generation of mixed radioactive and hazardous waste, the Shipyard has produced minor quantities of mixed waste. Base closure activities are expected to result in the generation of additional small quantities of NNPP mixed waste. G-RAM mixed waste (not associated with NNPP) has not been identified at this time.

Given the existing lack of national capacity to treat and dispose of mixed waste, it is necessary to store this small amount of mixed waste at the Shipyard until plans being developed pursuant to the Federal Facilities Compliance Act (FFCA) are completed in 1995. The Shipyard is currently operating under a revised RCRA Part B permit for storage of mixed waste in Building 246.

Radiological Environmental Monitoring

Radiological environmental monitoring has been conducted since the inception of NNPP work at the Shipyard and Naval Station. The monitoring consists of analyzing harbor sediment, water and marine life samples for radioactivity associated with Naval nuclear propulsion plants, radiation monitoring around the perimeter of the Shipyard and Base, and

effluent monitoring. Environmental samples are checked at least annually by a U.S. Department of Energy laboratory to ensure the analytical procedures are correct and standardized. This monitoring has consistently demonstrated that NNPP activities at the Shipyard and Naval Station have had no adverse impact on the environment or public health. The state has confirmed this observation on numerous occasions. The USEPA has also confirmed this observation in a 1987 report.

3.13.8 Radon

DoD policy is to ensure that any available and relevant radon assessment data pertaining to BRAC property being transferred shall be included in property transfer documents. DoD policy is not to perform radon assessment and mitigation prior to transfer of BRAC property unless otherwise required by applicable law.

In response to concerns about the potential health effects associated with radon exposure, and in accordance with the Indoor Radon Abatement provisions of Subchapter III of the TSCA, 26 U.S. C. §§2661 to 2671, DoD conducted a study to determine radon levels in a representative sample of its buildings. In addition, as part of DoD's voluntary approach to reducing radon exposure, DoD has applied the USEPA guidelines for residential structures with regard to remedial actions.

In January 1989, the Secretary of the Navy initiated the Navy Radon Assessment and Mitigation Program (NAVRAMP) in response to a TSCA provision requiring all federal agencies to test for radon. This effort concentrated on living spaces, training areas, and hospital buildings where personnel frequently are present (U.S. Department of the Navy 1994).

Under NAVRAMP, random radon level testing surveys have been performed in 32 housing areas, the brigs, two barracks, and seven buildings in the Fleet and Mine Warfare Training Center. A random radon level testing survey CNSY was completed in 1994 (U.S. Department of the Navy 1994).

Results of the completed tests indicate that Building 202 contains radon gas concentrations above the USEPA's action level of four picocuries per liter (4 pC/L). This building is used as a training facility by FMWTC. Within the building, four rooms were confirmed to have levels above the action level. These results ranged from 4.20 pC/L to 19.10 pC/L. Table 3-30 lists the USEPA mitigation action levels for structures containing Radon gas.

On October 31, 1994, the Office of the Under Secretary of Defense issued the Department of Defense policy for radon gas at BRAC properties. This policy requires that any available and relevant radon assessment data pertaining to BRAC properties being

<p align="center">Table 3-30</p> <p align="center">EPA RADON ACTION LEVELS AT CHARLESTON NAVAL BASE, SOUTH CAROLINA</p>	
Concentration (pC/L)	Mitigation Timeframe
0 - 4	No Action Required
4 - 20	Within 5 Years
20 - 200	Within 6 Months
> 200	Within 3 Weeks

transferred shall be included in the property transfer documents (i.e., finding of suitability to lease and finding of suitability to transfer).

According to USEPA mitigation action levels for structures containing radon gas, the level of radon in Building 202 is such that mitigation is recommended within five years. The Navy is not required to mitigate these radon levels; however, all relevant and available radon assessment data will be provided in the property transfer documents.

3.13.9 Ordnance

Charleston Naval Base has been involved in supplying ordnance to ships since World War II. During the 1940s, there were reported instances of accidental releases of live ordnance in four locations on the Base. These locations are being addressed under the RCRA Facility Investigation currently in progress and are described in Section 3.13.1 and 4.13.1. Table 3-31 lists the approximate locations, dates, and types of ordnance that are suspected to remain on and near the Base (U.S. Department of the Navy 1994).

3.13.10 Pesticides

The use of pesticides at the Base has been limited to mosquito control and the control of the general pest population. The pesticide-contaminated areas on base include SWMU 3-Pesticide Mixing Area, SWMU 4—Pesticide Storage Building, and AOC 660. These sites are being investigated and will be remediated under the RFA/RFI program (U.S. Department of the Navy 1994). The pesticide areas are listed in Table 3-32.

<p align="center">Table 3-31</p> <p align="center">UNEXPLODED ORDNANCE</p> <p align="center">AT CHARLESTON NAVAL BASE, SOUTH CAROLINA</p>		
Ordnance Type	Location	Date of Release
Two Mark-17 Depth Bombs	South of Facility 665; East of Facility 663	October 1943
Two Mark 47 Torpex Loaded Depth Bombs	Cooper River - Approximately Due East of Facility X-55	November 1943
Two An Mark-47 Loaded Depth Bombs	Between Piers T and S	January 1945
Three 5-inch Shells	South Side of Pier G (40 feet below Mean Water Level)	September 1944

Source: Department of the Navy 1994.

<p align="center">Table 3-32</p> <p align="center">PESTICIDE USAGE</p> <p align="center">AT CHARLESTON NAVAL BASE,</p> <p align="center">SOUTH CAROLINA</p>				
Study Zone	AOC Number	SWMU Number	Description	Material Released, Stored, or Disposed Of
G	—	3	Pesticide Mixing Area	Pesticides
F	—	4	Pesticide Storage Building	Pesticides
H	660	—	Mosquito Control	Pesticides

Source: Department of the Navy 1994.

3.13.11 Outfalls and Miscellaneous Discharges

There are approximately 53 outfalls discharging water directly from the Base into area waters. Most of these direct discharges fall under the jurisdiction of the CWA, and are subject to the conditions of two NPDES permits issued to the Base by SCDHEC. Specific discharges covered under the existing NPDES permits include:

- Storm water runoff from the petroleum storage areas, specifically tanks 3900E, 3900F, 39A, and 39D, and the Chicora Tank Farm;
- Wastewater from the compressor house (Building 1292/46) (this outfall currently is not in use); and

- Storm water collected at various points throughout the Base.

In addition to the two existing NPDES permits, there are two outstanding permit applications: one for a general storm water discharge permit that would include the discharges from the Base, and the second for a permit to discharge water from the five land-based dry docks and one floating dry dock at the Shipyard (U.S. Department of the Navy 1994).

Despite efforts over the past few years, the origins of all waters entering the storm water system at the Base are not known. As part of its application for a storm water discharge permit, the Base is currently conducting a storm water discharge study to locate previously unidentified industrial connections to the Base storm water system. Preliminary results indicate that a number of industrial wastewaters are probably being discharged through this system. For example, water discharged from the fuel tank farm and loading facility most likely flows to the Cooper River through outfall 41. Also, a number of boilers and cooling towers have been identified that discharge blowdown water and condensate to the storm sewer (U.S. Department of the Navy 1994).

There are 129 drainage basins on base, and 66 of those contain industrial activity. Based on review of each drainage basin, 30 of the 53 outfalls have been proposed for more extensive evaluation. The 30 outfalls were selected for further sampling based on three criteria: the chemical oxygen demand (COD) concentrations were found to exceed 100 mg/L at that outfall during a 1992 storm water sampling event; there was visual observation of illicit discharges (e.g., oily sheens); and at outfalls where no dry weather flows occur, there is a potential for illicit discharges resulting from the industrial activity within the outfall's drainage basin (SECDI 1993b).

In addition to the 53 direct discharge outfalls, the base also has three discharge points to the NCSD: the main base sewer discharge, the metal plating facility (Building 226) discharge, and the FISC oil/water separator discharge. These discharge points are permitted under a nondomestic wastewater discharge permit issued by the NCSD. Miscellaneous industrial wastewater discharges from the base, including wastewater from ships, also are covered under this permit. The entire sanitary sewer system has been designated as SWMU 37 and is being investigated under the RFA/RFI program (U.S. Department of the Navy 1994).

Most facilities on the base are currently connected to the NCSD sanitary sewer system, and most remaining septic systems are inactive. Facilities with active septic systems include Building 661, Building 665, and Building 1226. There also is one septic system that

is not associated with any facility. It is located at the traffic island near the intersection of Avenue D North and Second Street North (U.S. Department of the Navy 1994).

3.13.12 Adjacent Properties with Known or Suspected Releases

The Navy has conducted a database and records search and visual inspection of adjoining property to determine its environmental condition (U.S. Department of the Navy 1994). Only properties directly adjoining the naval base are included in this FEIS.

As the base expanded, areas surrounding the Naval Base to the west, north, and south were developed. The base is bounded by the Cooper River along its eastern boundary. Well-established industrial areas exist to the north and south of the base and currently are occupied by several large industrial companies. The area immediately west of the base is occupied by residential and commercial properties along Spruill and Rivers avenues (U.S. Department of the Navy 1994).

The Navy's recent property survey identified 12 CERCLA and Superfund Amendments and Reauthorization Act (SARA) Title III sites in the vicinity of the Base. Twenty-two hazardous material spills were identified within 0.25 mile of the Base. Twenty-four large-quantity generators and four small-quantity generators were identified within 1 mile of the Base. There are 22 Facilities Index Systems (FINDS) sites, 34 Clean Air Act sites, 51 leaking UST sites, and 19 other UST sites also located within 1 mile of the Base (U.S. Department of the Navy 1994). Information pertaining to the environmental condition of sites adjacent to or within a quarter mile of the Base is provided in Appendix E, Table E-8.

4

Environmental Consequences and Mitigative Measures

This section evaluates the potential environmental impacts of disposal and redevelopment of the Charleston Naval Base property pursuant to Alternative Reuse Scenario 3, including reuse Concepts 3, 3A, and 3B, and the two alternative reuse scenarios. In addition, mitigation measures to avoid or lessen potential environmental impacts are presented. The Navy will not be responsible for implementing mitigation measures following disposal of the property, since most potential environmental impacts would result directly from reuse of the property by other entities. Full responsibility for implementing these suggested measures, therefore, would be borne primarily by the future property recipients or local/state governmental and regulatory agencies. Cumulative impacts, which are those that could result from the incremental impact of the proposed action when added to other past, present and future actions, are also identified. A description of Alternative Reuse Scenario 3, including Development Concepts 3, 3A, and 3B and alternative scenarios is presented in Section 2 of this FEIS.

4.1 Land Use and Aesthetics

A land use impact analysis was performed on Alternative Reuse Scenario 3 (including its Development Concepts) each of the alternative reuse scenarios. Descriptions of the land use and aesthetic impacts associated with Alternative Reuse Scenario 3, including Development Concepts 3, 3A, and 3B and the two alternatives are provided herein.

4.1.1 Alternative Reuse Scenario 3: Development Concept 3

Adoption and implementation of Concept 3 would involve major, long-term changes to the existing land use patterns, development controls, and ownership. This concept identifies five major employment centers totaling 762 acres: an office district, shipyard district, marine industrial district, new class A Marine Industrial Park, and an Intermodal Rail

Yard and cargo port terminal (BEST 1994). Table 4-1 identifies the approximate acreage of land uses affected by Concept 3.

Internal Land Use Consistency

The internal land use districts are generally compatible. The existing Naval Shipyard area is proposed for continued use as an industrial shipyard and maritime industrial facilities. These would include land uses such as steel stock yards, preparation and fabrication shops, building docks/berths/slips, electronics shops, and other uses related to shipbuilding/repair/conversion activities. The shipyard is surrounded by portions of Base North and Base West, which are transitional areas with less intense uses including office/training, community support, cultural park, and active recreation. These less intense transitional areas extend to areas of open space, housing, and community support which are adjacent to existing lands west of the site. While some of the districts within the transitional areas are not completely compatible, adequate buffering should mitigate any minor incompatibilities. For example, there is a potential for minor land use incompatibility between that portion of the port terminal to be located at the northern part of the Base adjacent to the less intense uses of the cultural park.

Proposed development for Base South includes a maritime Cargo Terminal, Intermodal Rail Yard, and Marine Industrial Park which are compatible as heavy industrial uses. Potential inconsistencies exist due to proposed development of the Cargo Terminal, Marine Industrial Park, and Intermodal Rail Yard on land that has been used for waste disposal activities. Existing contamination would influence future land use patterns at the Base, particularly at the landfill area (SWMU 9) and the chemical disposal areas (SWMU 14). These conflicts are addressed in greater detail in Section 4.13 of this FEIS. Due to site contamination, reuse plans could be altered, based on future decisions regarding site cleanup.

Several structures in the southern portion of the Base, including FMB 61, NS79, NS71, and NS65 through NS67, have been designated for housing, training, and other community service uses pursuant to the McKinney Act process (see Appendix B). No land use conflicts would result in the short-term, however in the long-term (i.e., 10 years) these uses would be incompatible with the development of the Cargo Terminal, Intermodal Rail Yard, and Marine Industrial Park. These community service uses would need to relocate, either to other facilities on-Base or off-Base, in order for Concept 3 to be implemented. This is not seen as a significant impact in that other suitable facilities can be made available prior to the construction of the Cargo Terminal and rail yard (see Appendix B).

Table 4-1

**ACRES OF LAND USE/VEGETATIVE COVER AFFECTED BY
DEVELOPMENT CONCEPT 3**

	Existing Vegetation/Land Cover							Open Water	Open Space/ Undeveloped	Totals
	Urban Intense	Urban Moderate	Wetland	Recreation	Wooded	Dredge Disposal Area	Officer Housing			
Intermodal Rail Yard	—	79	2	8	9	8	—	—	2	108
Recreation	—	28	1	12	—	—	—	—	19	60
Maritime Industrial Park	—	99	9	15	17	45	—	—	25	210
Marina	—	6	5	8	3	—	—	—	13	35
Maritime Cargo Terminal	60	207	4	1	5	2	—	82	34	395
Waterfront Park	12	27	5	45	—	—	27	—	—	116
Community Services	5	30	—	1	—	—	25	—	—	61
Housing	—	—	1	—	—	—	26	—	—	27
Office/Training	—	60	—	—	—	—	11	—	—	71
Shipyards	66	30	—	—	—	—	1	—	—	97
Open Space/Storm Water	—	15	96	8	20	16	—	—	64	219
Parking	10	33	—	—	—	—	—	—	50	93
Maritime Cargo	10	54	—	—	—	—	6	—	10	80
Tank Farm	—	—	—	—	—	—	—	—	16	16
Marine Industrial Area	10	47	—	—	—	—	—	—	12	69
Total (acres)	173	715	173	98	54	71	96	82	245	1,657

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External Land Use Consistency

The plan's proposed land use districts are, in general, compatible with the use of adjacent lands. The Marine Cargo Terminal, Intermodal Rail Yard, and Marine Industrial Park uses planned for the south end of the site are adjacent to the heavy industrial areas of Shipyard Creek and the "Neck". An open space/storm water management buffer separates the two areas. The area referred to as Base West in Section 3.1.1 generally parallels the Charleston Heights, Chicora Place, and Cherokee Place neighborhoods which are predominately residential with some commercial uses. Besides an open space/storm water management buffer separating the two areas, the majority of Base West is planned for residentially compatible uses including community support and active recreation. From McMillan Avenue north to Noisette Creek, the plan designates areas for housing, community support, and open space/storm water management adjacent to River Place and North Park Village residential developments and present no land use incompatibility. The 80 acre maritime Cargo Terminal proposed for the north end is adjacent to industrial port-related uses to the north and buffered from the Park Circle neighborhood to the west by an open space/storm water management area. Finally, the Chicora Tank Farm, located adjacent to Toole Middle School, is planned to be converted into a 27-acre active recreational area which compliments the surrounding middle school and residential area.

Potential Project Impacts

Aside from the major land use district impacts, there are certain components of Concept 3 that may alter the surrounding land use patterns. These impacts would result from improving site access and integrating the surrounding community with the site.

First, the on-site realignment of Cosgrove Avenue and off-site capital improvements to Cosgrove would improve direct access to the site, however they may shift some commercial development pressure to Cosgrove Ave. from the site's existing access points as traffic volumes along Cosgrove Ave. increase.

A second proposal is the removal of the existing CSX rail line running through the residential areas adjacent to Spruill Avenue and replacing it with a bike and pedestrian trail. The trail would provide a natural setting that would encourage the interconnection of the neighborhoods currently separated by the rail line, improve pedestrian access, and provide easy access between the site and the community via the open space greenways.

Finally, the development of a multiple berth container terminal and consolidated Intermodal Rail Yard on the southern portion of the site would have significant land use impacts. The proposed development of the southern portion of the site is dependent on the

construction of a new road and rail corridors with I-26 and the CSX and Norfolk and Southern main lines and grade separated links from the new interchanges directly to the site. Conceptually, the preferred rail and road access corridor would be located between Pittsburgh and Cherry Hill Avenues (BEST 1994). Potential land use impacts resulting from the proposal include: 1) the possible elimination or relocation of neighborhood homes and business; 2) the division of established neighborhoods; 3) the need for bridges across Spruill Avenue and Shipyard Creek; 4) the impact to the wetland area around Shipyard Creek; and 5) elimination of shipping access to a privately owned berth in the upper reaches of Shipyard Creek. In addition, other direct impacts of this road/rail connection, such as visual, noise, and vibration impacts must be considered in the final route engineering. The precise impact of the corridor cannot be determined until the final corridor location is established and the appropriate engineering and planning studies are completed. The final corridor location will be determined during Phase I of the Plan's implementation by the Redevelopment Authority, the developer of the Cargo Terminal, City of North Charleston, and SCDOT with input from USEPA, SCDHEC, and the general public. As shown in Figure 4-1, the conceptual alignment of the rail access from the CSX line to the Cargo Terminal would not result in the demolition of any housing but would be within 300 feet of residential structures. There are no state or local standards regarding minimum distances between rail lines and residential structures. Conceptual alignment of the roadway access to I-26 may traverse a portion of a mobile home park depending on its final alignment.

Aesthetics Resources

Development Concept 3 would result in improvements to the aesthetic resources of the site. Planned improvements will create a mixture of compatible land use and open space/greenways served by a roadway network which reduces bike/pedestrian and vehicular conflicts. Visual form improvements such as landscaping, elimination of nonfunctional streets and rail lines, removal of overhead steam lines, and the eventual clearance of vacant structures with little reuse potential will add to the visual unity and coherence of the site. Further, this concept includes significant amounts of open space greenways with bike and pedestrian linkages interconnecting the property with adjacent neighborhoods and waterfront areas.

Specific improvements include a 116-acre cultural park located at the existing officer housing area along the Cooper River. The plan envisions formal gardens at the site of the old Turnbull Plantation and the potential development of larger military housing units into potential inns and conference centers (BEST 1994). Major roadway, landscape, and

demolition improvements designed to create an inviting atmosphere are planned for McMillan and Cosgrove Avenues, the principal means of access to the core area.

4.1.1.1 Development Concept 3A

Land Use Impact Analysis

This concept incorporates slight modifications to the design and layout of Concept 3 in order to avoid areas of environmental sensitivity and development constraints. Individual land use compounds of Concept 3A are similar to those discussed for Concept 3.

Although Concept 3A includes similar land use districts and employment centers as does Concept 3, it would affect different land use/vegetative cover. Table 4-2 identifies the approximate acreage of land uses affected by Concept 3A. Of note is the reduction of wetland loss from 20.5 acres to 9.3 acres. The increase in recreational land use is attributable to the larger buffer area along Shipyard Creek.

By avoiding SWMU 9 and SWMU 14, this plan avoids internal land use inconsistency which is evident with Concept 3 and these areas. However, a similar concern exists with respect to the need for long term relocation of some community/human service providers in the southern portion of the Base to allow for the proposed Marine Cargo Terminal. For example, the State Department would be required to relocate in the future; however, they would be relocated to a suitable facility by the developer of the Cargo Terminal at no cost to the State Department (Charleston Naval Complex Redevelopment Authority 1995e). This plan includes the same road/rail access across Shipyard Creek as does Concept 3. Consistency with external land uses is similar to those for Concept 3. The Cargo Terminal is located 200 feet further into the Cooper River, covering an additional 50 acres.

Aesthetic Resources

Improvements to the aesthetic resources at the Base pursuant to Concept 3A would be similar as those discussed for Concept 3.

4.1.1.2 Development Concept 3B

This concept provides for the continuation of land uses such as office/training, community support, and shipyard and maritime uses, and introduces new land uses that are intended to provide additional amenities, community access, and safety (i.e., storm water management). Three new major employment centers are proposed including an office district



SOURCE: Ecology and Environment, Inc. 1994

Figure 4-1 CONCEPTUAL RAILROAD AND ROADWAY CORRIDORS

Table 4-2

**ACRES OF LAND USE/VEGETATIVE COVER AFFECTED BY
DEVELOPMENT CONCEPT 3A**

	Existing Vegetation/Land Cover							Open Water	Open Space/ Undeveloped	Totals
	Urban Intense	Urban Moderate	Wetland	Recreation	Wooded	Dredge Disposal Area	Officer Housing			
Intermodal Rail Yard	—	85	1	—	—	6	—	2	14	108
Recreation	—	28	1	12	—	—	—	—	19	60
Maritime Industrial Park	—	120	2	38	11	24	—	—	25	220
Marina	—	6	5	8	3	—	—	—	13	35
Maritime Cargo Terminal	60	200	1	1	5	2	—	133	46	445
Waterfront Park	12	27	5	30	15	—	27	—	—	116
Community Services	5	30	—	1	—	—	25	—	—	61
Housing	—	—	1	—	—	—	26	—	—	27
Office/Training	—	60	—	—	—	—	11	—	—	71
Shipyards	66	30	—	—	—	—	1	—	—	97
Open Space/Storm water	—	14	107	8	20	39	—	—	71	259
Parking	10	14	—	—	—	—	—	—	19	43
Marine Industrial Area	10	54	—	—	—	—	6	—	10	69
Tank Farm	—	—	—	—	—	—	—	—	16	16
Maritime Cargo	10	47	—	—	—	—	—	—	12	80
Total (acres)	173	715	123	98	54	71	96	135	245	1,710

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of 70 acres; a shipyard district of 175 acres; and two maritime industrial districts totaling 525 acres. In addition to these employment centers, a 115 acre waterfront cultural park is proposed (as in Concept 3A). Land use activities within and adjacent to the cultural park include a conference center, visitor/exhibition center, restaurant, and formal gardens, restored from a portion of the base containing the former Olmsted Park and Turnbull Plantation.

The principal land use strategy in Concept 3B is to develop a 700 acre modern shipyard and maritime industrial enterprise area including retention and expansion of all existing shipyard facilities, coupled with compatible and mutually supportive industries allied to shipbuilding, ship repair, and ship conversion. With the exception of 80 acres of maritime industrial land use proposed for the northern portion of the Base, the majority of the shipyard/maritime industrial uses are proposed for the existing Controlled Industrial Area (CIA) and the southern half of the Base. This concept assumes the shipyard and maritime industrial areas will consist of administrative activities, such as policy/planning and technical/commercial support, and basic production activities including steel manufacturing, outfittings manufacturing, and ship construction. Table 4-3 shows land use and coverages affected by Concept 3B.

Typical land uses directly associated with these activities would include, but are not limited to:

- Steel stockyards;
- Preparation and fabrication shops;
- Building docks, slips, or berths and their accessory equipment (e.g., fixed cranes, marine elevators/shiplift facilities, construction and construction platforms);
- Welding, plating, and electroplating booths;
- Electrical and electronics shops;
- Cargo berths for receiving raw material and equipment;
- Accessory warehouses and storage areas; and
- Accessory office space for administrative functions.

Because of the wide variety of manufactured materials and components required for shipbuilding, Concept 3B assumes that suppliers and subcontractors in support of shipyard activities will also locate within maritime industrial land use areas. These allied industries would include, but are not limited to:

Table 4-3

**ACRES OF LAND USE/VEGETATIVE COVER AFFECTED BY
DEVELOPMENT CONCEPT 3B**

	Existing Vegetation/Land Cover							Open Water	Open Space/ Undeveloped	Totals
	Urban Intense	Urban Moderate	Wetland	Recreation	Wooded	Dredge Disposal Area	Officer Housing			
Recreation	—	49	1	23	—	—	13	—	14	100
Maritime Industrial	69	346	1	20	40	49	—	—	—	525
Waterfront Park	12	27	5	45	—	—	26	—	—	115
Community Services	5	31	—	2	—	—	—	—	—	60
Housing	—	—	—	—	—	—	25	—	—	25
Office/Training	—	60	—	—	—	—	10	—	—	70
Shipyard	77	98	—	—	—	—	—	—	—	175
Open Space/Storm Water	—	72	—	8	14	22	—	—	168	400
Parking	10	32	—	—	—	—	—	—	48	90
Tank Farm	—	—	—	—	—	—	—	—	15	15
Total (acres)	173	715	123	98	54	71	96	—	245	1,575

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- Production and fabrication of equipment used in production/repair/conversion of ships such as boilers, cargo handling equipment, dredging machinery, engine and electrical components, hydraulic equipment, heating and ventilation equipment, and sonar systems equipment;
- Research and development activities; and
- Professional and administrative offices.

The proposed 525 acres of maritime industrial area has the potential to accommodate approximately 2,021,500 square feet of industrial/warehouse/office space. Of this square footage, approximately 925,100 is new construction with the remaining square footage provided through the renovation and reuse of existing buildings. Also, 50 acres of the existing shops in the shipyard/CIA would be retained for intermediate and long term job development.

In addition to the maritime industrial uses, Concept 3B proposes that many other buildings and structures be renovated and converted to other uses, as required for plan implementation. Throughout the Base, approximately 4,082,760 square feet of existing structures are proposed for reuse. This concept also includes utilization of 10 existing piers, five dry dock facilities, and many of the larger, high bay buildings that are well suited for manufacturing and storage.

Buildings and facilities currently used by the State Department and NOAA will remain. Development Concept 3B will not require these facilities to relocate in the future as necessitated by Concept 3A.

Development concept provides for the development of a comprehensive and integrated drainage and open space program. This system is intended to provide storm water retention, restore natural drainage patterns to the Cooper River, and concurrently use these drainage areas for recreation and pedestrian linkages to proposed park areas from the Chicora, Union Heights, and Park Circle neighborhoods of North Charleston. Over 600 acres are proposed to be incorporated into the park/open space/storm water management system for active and passive recreation.

A total of 60 acres is proposed for major community support activities. These areas will provide buildings and facilities for civic and social uses including the programs of the region's social service providers. The concept is intended to provide opportunity for both the short- and long-term social programs such as those under the McKinney Act and the National Civilian Community Corps.

4.1.2 Alternative Reuse Scenario 1

This alternative attempts to capture the reuse potential of existing structures while keeping capital and development cost at a minimum.

Land Use Impact Analysis

This scenario provides for the redevelopment of the property utilizing a mixture of existing facilities and new developments. It establishes a waterfront attraction featuring a mixture of land uses including parkland/recreational areas, waterfront industrial, waterfront commercial, and open space. To facilitate the transition from the industrial shipyard area to the off base residential areas to the west, a 670 acre commercial/retail area is proposed along Spruill Avenue. This area, which would be sold via public sale, could support a shopping mall or other mix of shops/restaurants, which would serve the local community and would generate a tax base for the City of North Charleston. The abundance of open space and recreational lands would provide for increased outdoor opportunities for the public, as well as improved aesthetics for the property. The existing dredge material disposal area at the southern portion of the property is also retained for continued use as a dredge disposal site, and would be sold via public sale. Community service providers requests for residential, office, and training uses would be accommodated. Table 4-4 identifies the approximate acreage of land uses affected by Alternative Reuse Scenario 1.

Aesthetics Resources

This alternative would not result in long-term improvements to the aesthetic resources of the site. Eventual clearance of substandard structures with little or no reuse potential would be aesthetically beneficial; however, the needed landscaping improvements to make the site aesthetically pleasing are not included. Needed improvements, including infrastructure replacement and modification, open space designation and improvement, adequate landscaping and buffering, access and circulation improvements, and designation of compatible functional land use districts, are not provided for in this alternative.

4.1.3 Alternative Reuse Scenario 2

This alternative assumes major capital investment in road and utility infrastructure, parking, building renovation, and landscaping but focuses more on tourism potential than on industrial development.

Table 4-4

**ACRES OF LAND USE/VEGETATIVE COVER AFFECTED BY
ALTERNATIVE REUSE SCENARIO 1**

Waterfront	Existing Vegetation/Land Cover							Open Water	Open Space	Totals
	Urban Intense	Urban Moderate	Wetland	Recreation	Wooded	Dredge Disposal Area	Officer Housing			
Industrial/Commercial	—	200	—	—	—	—	—	—	—	200
Active Recreation	—	12	1	55	—	—	—	—	182	250
Warehouse/Storage	—	63	—	—	—	—	—	—	2	65
Commercial Retail	—	44	—	6	—	—	—	—	20	70
Dredge Material	—	—	—	—	—	65	—	—	—	65
Shipyards	90	—	—	—	—	—	—	—	—	90
Mixed Use	—	84	—	—	6	—	—	—	—	90
Industrial Shops	62	3	—	—	—	—	—	—	3	68
Open Space/Storm Water	—	30	104	9	6	—	—	—	—	149
Housing	21	6	—	—	—	—	63	—	5	95
Office/Training	—	5	—	—	—	—	17	—	—	22
Community Support	—	81	—	—	—	—	16	—	3	100
Passive Recreation	—	127	18	28	42	6	—	—	29	250
Parking	—	60	—	—	—	—	—	—	—	60
Total (acres)	173	715	123	98	54	71	96	—	245	1,575

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Land Use Impact Analysis

This alternative provides many of the beneficial assets of Alternative Reuse Scenario 3 and achieves many of the community's goals. As with Scenario 3, the central core of the facility is intensely developed and surrounded by a transitional area of less intense uses that utilize buffering to mitigate land use incompatibilities. Also, this plan has improved vehicle, bike and pedestrian access to the site. Vehicular and nonvehicular improvements include the realignment of and capital improvements to Cosgrove Avenue, the extension of Virginia Avenue to Viaduct Road, the connection of the Charleston Heights and Chicora neighborhood roads to the Virginia Avenue extension, and the removal of the CSX rail line and conversion of the right-of-way to a pedestrian/bike trail.

Alternative 2 designates the north end of the site for warehouse storage. For land use purposes, this use is similar in intensity of use and compatible with the heavy industrial uses to the north (i.e., bulk liquid storage facilities). However, the development of the area into a Marine Cargo Terminal would make better use of the existing infrastructure (i.e., direct access to the Mark Clark Expressway, direct access to existing rail lines, and access to the Cooper River).

The other significant difference is the development of the southern portion of the site. Whereas Concepts 3 and 3A would develop the area into a new Class A Marine Industrial Park and an intermodal cargo port district with rail and road access corridor(s), this alternative designates the majority of the area as open space/storm water management, or active recreation. Alternative Scenario 2 also provides for a 300-acre waterfront commercial/industrial area to capitalize on the existence of 23 piers and to encourage industries which utilize waterfront areas (i.e., fisheries, marine products processing, tour boat operations, etc.) to locate in this area. As such, waterfront commercial/industrial areas would not impact or be impacted by the contamination in the southern part of the Base (i.e., SWMU 9 or SWMU 14). Table 4-5 identifies the appropriate acreage of land uses affected by Alternative Reuse Scenario 2.

Aesthetics Resources

This alternative would result in virtually the same long-term aesthetic improvements as described under Concept 3 with the notable exception being the development of the southern portion of the site which would retain a lesser developed landscape with additional open space and vegetation.

Table 4-5

**ACRES OF LAND USE/VEGETATIVE COVER AFFECTED BY
ALTERNATIVE REUSE SCENARIO 2**

Waterfront	Existing Vegetation/Land Cover							Open Water	Open Space	Totals
	Urban Intense	Urban Moderate	Wetland	Recreation	Wooded	Dredge Disposal Area	Officer Housing			
Industrial/Commercial	—	297	3	—	—	—	—	—	—	300
Active Recreation	—	7	—	60	5	—	—	—	128	200
Warehouse/Storage	—	51	—	—	—	—	—	—	19	70
Cultural Park	—	30	5	30	—	—	20	—	85	170
Shipyards	69	—	—	—	—	—	—	—	—	69
Mixed Use	31	—	—	—	—	—	21	—	—	52
Industrial Shops	73	17	—	—	—	—	—	—	—	89
Open Space/Storm Water	—	61	75	8	—	—	—	—	6	150
Housing	—	—	—	—	—	—	35	—	—	35
Office/Training	—	161	—	—	—	6	20	—	3	190
Community Support	—	25	—	—	—	—	—	—	—	25
Passive Recreation	—	41	40	—	49	65	—	—	5	200
Parking	—	25	—	—	—	—	—	—	—	25
Total (acres)	173	715	123	98	54	71	96	—	245	1,575

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4.1.4 Cumulative Impacts

Implementation of the Reuse Scenario 3 as proposed would result in both beneficial and adverse cumulative land use impacts. The beneficial impacts include improving road, rail and nonvehicular access to the Naval Base; integration of the surrounding community with the site; establishing a more aesthetically pleasing environment within this portion of North Charleston; and the provision of public benefits such as open space, active and passive recreational areas, and community support service. Potential adverse impacts included the potential direct and indirect impacts of the access rail and road corridor(s) and interchange(s) (for Development Concepts 3 and 3A), and the unintended negative impacts from changes to nonresidential development patterns.

It should be noted that development of the proposed Cargo Terminal, Marine Industrial Park, and Intermodal Rail Yard at the Base by SCSPA may preclude the development of a similar facility by SCSPA on Daniel Island. Development of this facility at the Base would avoid cumulative land use impacts resulting from development of an industrial use on an undeveloped site.

4.1.5 Mitigation Measures

Measures to be taken by the Redevelopment Authority to mitigate potential land use impacts would include implementation of appropriate planning mechanisms to ensure that the redevelopment and reuse of the Charleston Naval Base is consistent with the goals of the plan and the plans and policies of the City of North Charleston. These measures include:

- Implementing effective land use plans and development controls;
- Ensuring minimal land use impacts from rail and road corridor and interchanges impacts;
- Implementing a capital improvement program; and
- Coordinating specific land use developments with ongoing contamination investigations.

Land Use Plan and Development Controls

Upon transfer of the complex from the Navy to the Redevelopment Authority or other entity responsible for redevelopment, the lands or a portion thereof would become subject to local government control. The redevelopment process will be required to comply with the City of North Charleston's Comprehensive Development Plan and land development controls

for implementation. Mitigation of land use conflicts will be best achieved by ensuring consistency between the plan and the local land development policies and regulations.

The City of North Charleston has endorsed Development Concept 3B and it is the intent of the Planning Commission and City Council to adopt the Plan as an amendment to the comprehensive plan. It is also the intent of North Charleston to amend their zoning code, as necessary, to accommodate the reuse plan (Gore 1994). This action by the City of North Charleston will provide the City the opportunity to influence development at the Base, and to mitigate any potential land development conflicts as the redevelopment process is implemented.

In the event that current zoning is not modified prior to implementation of the redevelopment plan, the site's existing zoning of heavy industrial (M-2), which permits all land uses designated within Alternative Reuse Scenario 3 with the exception of residential dwellings which may continue in nonconforming uses. Nonconforming uses are subject to restrictions on modification and expansion in accordance with Section 4-5 of the North Charleston Zoning Ordinance.

Rail and Road Corridor and Interchange Impacts

The proposed rail and road access corridor between Pittsburgh Ave. and Cherry Hill Ave. and the proposed interchanges with I-26 and the CSX and the Norfolk and Southern rail lines represent potentially significant land use impacts associated with Concepts 3 and 3A. To mitigate the land use impacts the corridor should be located such that it avoids existing residential areas and requires minimal private property acquisition and relocation of individuals and businesses. Also, impacts such as visual, noise, vibrations, and diminishment of adjacent property values must be minimized. The corridor location should avoid, to the greatest extent possible, existing wetlands of high habitat value, potentially contaminated areas, and limiting navigational access to the upper reaches of Shipyard Creek.

For specific regulatory requirements, the following regulatory agencies, at a minimum, will need to be contacted and appropriate permits secured by the Redevelopment Authority: Planning and Zoning Department for City of North Charleston, City of Charleston, and Charleston County; the Local Council of Governments; SCDHEC Office of Resource and Conservation Management (formerly the South Carolina Coastal Council); EPA; SCDHEC; Army Corps of Engineers; and the Federal Department of Transportation and South Carolina Department of Transportation (see Section 5.2).

Capital Improvements Programming

The implementation of Development Concepts 3 and 3A would require the expenditure of approximately \$960 million for infrastructure improvements such as roads, rail lines, bridges, potable water, sanitary sewer, storm water, electricity, landscaping, and building demolition. Development Concept 3B would cost about \$209 million. The programming would coordinate the associated cost of capital projects with the phasing and sequence of the redevelopment process. Therefore, certain issues must be resolved prior to the development and implementation of the capital improvements program (CIP) including what entity(s) would be responsible for developing the CIP, and how would the CIP be updated; what entity(s) would be responsible for the cost of providing area wide and site-specific infrastructure; how would the CIP relate to the 20 to 30 year phasing of Scenario 3; and how would the required off- and on-site improvements be coordinated. Clarification of the issues would result in a more effective and economically efficient redevelopment process. The CIP should be prepared by the Redevelopment Authority and should be updated on an annual basis.

Coordination of Developments with Ongoing Contamination Investigation

As specific land use developments are proposed, particularly those near previously contaminated areas including SWMU 9 and SWMU 14, they would need to be reviewed and approved by the USEPA and SCDHEC to ensure that they would not impact, or be impacted by remediated waste sites. Since the investigation and analysis of these areas is ongoing (see Sections 3.13 and 4.13 of this FEIS) by the Navy, USEPA, and SCDHEC, information regarding extent and types of contamination at the Base will not be fully available until after the EIS process is complete. To ensure that land use conflicts do not occur in the future, coordination with USEPA and SCDHEC would be critical.

4.2 Terrestrial and Aquatic Environments

Implementation of the concepts as outlined under Alternative Reuse Scenario 3 would result in negligible impacts to the terrestrial and aquatic environments in some areas of the Charleston Naval Base while resulting in significant impacts in other areas, primarily where extensive construction is proposed. Because the Reuse Plan is conceptual, it is difficult to formulate exact impacts in terms of acreages. It is likely that minor project modifications will be adequate for either minimizing or eliminating impacts to particular areas on base. For the purposes of examining the various alternatives, the generalized schematic for each proposed reuse scenario was overlaid onto the maps depicting the existing environment on the Naval

Base. Because no detailed engineering has been completed for any of the alternative scenarios, it is assumed that, for most of the presented land uses the proposed reuse plans would fully utilize and replace existing land uses for each identified area. This assumption was not appropriate for examining the impacts of the marine and proposed open spaces, which in actuality will have little direct impact to existing resources. Impacts resulting from implementation of Alternative Reuse Scenario 3 and potential mitigation for each alternative are discussed in the following sections.

4.2.1 Alternative Reuse Scenario 3: Development Concept 3

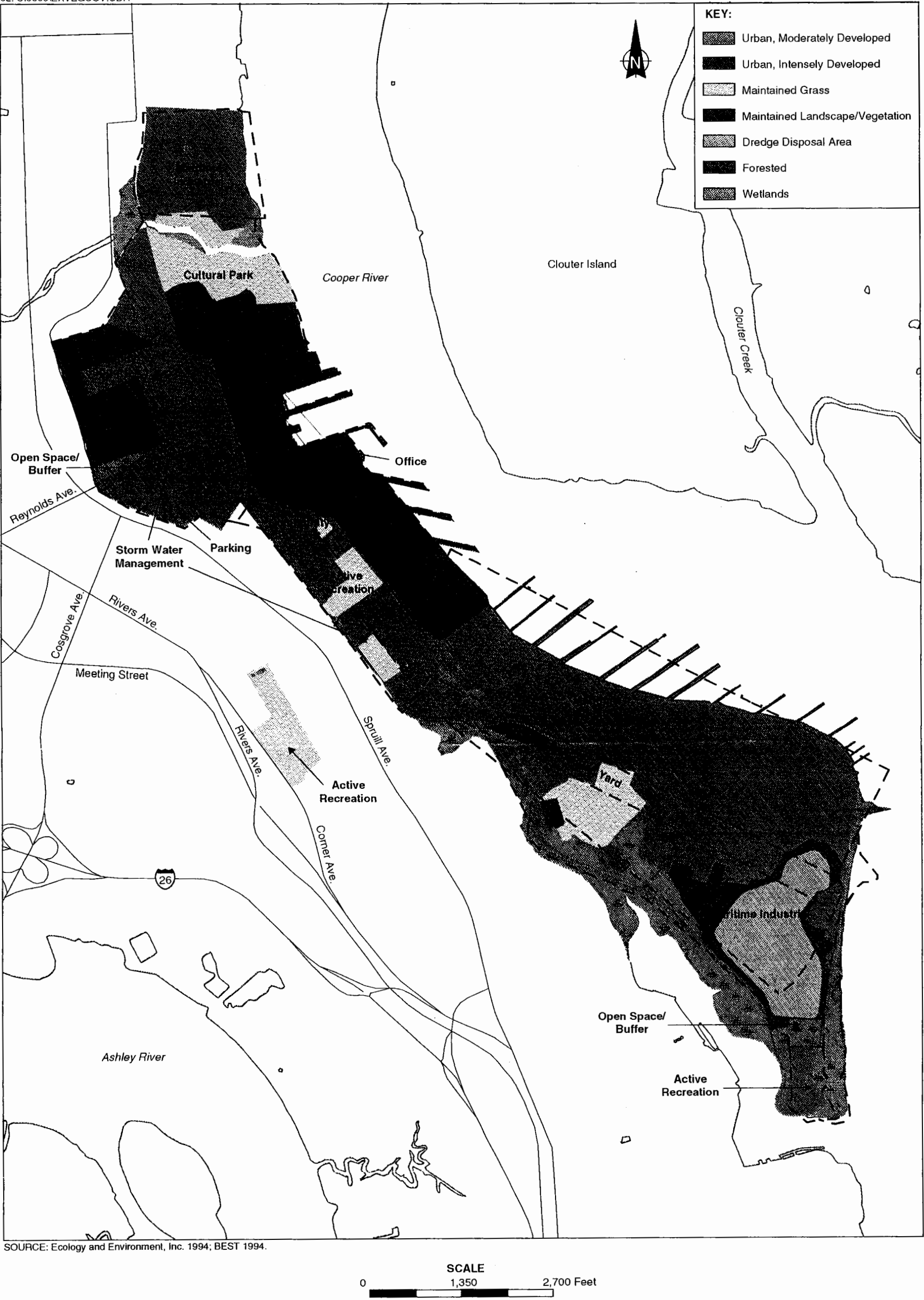
Vegetation

Impacts to the majority of the existing vegetated areas would occur under this concept. This plan calls for expanding the existing facilities, as well as creating additional industrial/marine cargo areas, and providing rail access to these areas. Figure 4-2 shows an overlay of Concept 3 on the existing land cover. Table 4-1 identifies impact of Concept 3 on land use/vegetative cover at the Base.

This alternative would have negligible impact on the Officers Housing Area in the northern part of the Base, while significantly impacting existing vegetation in the recreational areas, dredge disposal area, and undeveloped woodlands of the base. The officer's housing area is proposed for development as a park area, which would utilize the existing vegetation for aesthetic value. Proposed landscaping would be planted to increase the "green space" value in the area.

Implementation of Concept 3 would, however, necessitate the removal of approximately 37.1 acres of the undeveloped shrubby and forested lands toward the southern edge of the base, for development of the marine terminal facilities. However, as part of this alternative, approximately 135 acres toward the southern end of the Base would be committed to green space for the purposes of recreation and storm water management. The restoration of this area for recreation and storm water management would more than likely result in a park-like setting rather than undeveloped land, with more aesthetic benefits than actual habitat value.

Approximately 97 acres of grassy recreational fields on the Base would be impacted during the initial development of the base, but overall improvements would be realized as recreational usage is a considerable component of Concept 3. The existing dredge disposal site toward the southern end of the base has reestablished with herbaceous to woody vegetation. Approximately 55.7 acres out of the existing 71 acres intersects with reuse plans



SOURCE: Ecology and Environment, Inc. 1994; BEST 1994.

Figure 4-2 EXISTING VEGETATIVE COVER WITH DEVELOPMENT CONCEPT 3

11/10/2017

requiring extensive alteration. Most of the dredge disposal area will be impacted by the Marine Industrial Park and rail yard. The remaining acreage is dedicated to open space.

The wooded portions of the Base will be significantly affected as approximately 37.8 of the existing 64.6 acres will be impacted by the Cargo Terminal, Intermodal Rail Yard, and Marine Industrial Park. The only vegetated areas not impacted during implementation of the initial phase of Concept 3 would be at the southernmost tip of the base, in the vicinity of the marina, and along Shipyard Creek, which are identified as either marine or open space.

The majority of the impacts to vegetation stemming from Development Concept 3 would result directly from the creation of the Marine Industrial Park and the Intermodal Railroad Yard. The remainder of this plan primarily uses existing facilities, or would only require minor modifications prior to reuse.

Although the vegetation on Base is not unique, the habitat it provides is important due to the overall developed nature of the Cooper River waterfront and North Charleston, and the general lack of undeveloped lands in the area. As shown on Figure 4-2, approximately 37 acres of shrubby and wooded vegetation would be removed and altered, while 97 acres of open recreation areas would be altered. The loss of habitat due to the proposed development in wooded, wetlands, and undeveloped areas, would directly impact the wildlife on site which is discussed in the following subsection.

Wildlife

The development of the Marine Industrial Park, Intermodal Rail Yard and the Cargo Terminal would eliminate much of the natural areas on the Base, impacting over half of the wooded areas on site. The only ecosystems with only minor impacts are the adjacent tidal marshes and tidal flats. Demolition of existing structures, construction, and operation of the proposed activities and uses at the Base would result in moderate short- and long-term impacts to habitat and to wildlife populations. The removal of vegetative cover will result in limited mortality of less mobile forms of wildlife such as amphibians, reptiles, and small mammals that are unable to escape the construction area. If possible, demolition and construction activities should be planned outside of nesting seasons to minimize direct loss of nesting birds. Any potential impacts to migratory birds would need to be evaluated by the redeveloper under the federal Migratory Bird Treaty Act. A complete analysis will require the final approved building footprints to determine the extent of impact. As a result of the planned development of currently undeveloped areas, little habitat would remain available in the project area except for species well adapted to development and human activity and species that utilize the adjacent tidal lands. Typical species that coexist with human activity would include the

European starling, American robin, sea gulls, and eastern cottontail. Development Concept 3 would essentially leave the marsh area bordering the southern end of the Base unchanged. However, increased freshwater intrusion due to storm water runoff may result in changes to the wetland characteristics. Short-term impacts would be expected during the construction activities, but would return to near preconstruction activity following construction of the port facilities.

The implementation of Concept 3 could have both negative and positive impacts to the aquatic environment adjacent to the Naval Base. Construction activities will cause a direct short term impact to the aquatic ecosystem stemming directly from sedimentation in the water body. Additionally, some mortality to the lesser mobile species will likely result from construction. Any potential impacts identified will need to be mitigated as discussed in the following section.

Potential positive impacts could result from the operation of the Marine Cargo Terminal. The pilings on which the terminal is built will provide suitable habitat as attachment sites for benthic organisms that play beneficial roles in the estuarine environment (Mager, Jr. 1994). Additionally, the waters under the pier will provide temporary or permanent shelter for fish species. Maintenance dredging of the near-shore area between existing piers minimizes the usability of the water for shelter at the present time.

Threatened and Endangered Species

Implementation of Development Concept 3 would directly impact several state designated species of concern that currently or historically have occurred on the base.

Two Least Tern nesting colonies on the Base are currently located on building rooftops. These birds are state-listed threatened species of concern. Both of the buildings used for the nesting colonies fall within the identified marine resource portions of the plan and likely would be demolished to allow for the Cargo Terminal. Based on information from the Department of Natural Resources Division of Wildlife and Freshwater Fisheries (formerly referred to as SCWMRD), these colonies historically were quite successful, and accounted for almost 8% of all Least Tern breeding success throughout South Carolina in 1990 (Murphy and Saverno 1990). However, a 1994 nest count indicated that only 23 pairs were currently located at the Base, representing 1.5% of the states nesting population (Murphy 1994). While the displacement of 23 nesting pairs is not significant, given the 1,660 nesting pairs statewide, a locally important impact may result, and the cumulative loss of tern habitat and the significant local impact is a concern of SCDNR. The loss of habitat statewide is evident in

that 60% of Least Tern nesting pairs in the state now use rooftops rather than their original beach habitat.

Due to the placement of the Least Tern on the State threatened species list, they have formal protection under the State Endangered Species Act and the Federal Migratory Bird Treaty Act. These laws state that no egg, chick, or juvenile/adult can be destroyed. Before any demolition/renovation to these buildings can be undertaken, the SCDNR would be contacted to determine their presence at that time. No impacts would be permitted during nesting periods from April to October (Murphy 1994).

Wading bird colonies utilized by a variety of egrets, ibises, and herons have been established at two separate times and at two separate but adjacent locations in the larger wooded tracts of land on the southern end of the base. No current usage of either area was noted during the spring of 1994 (E & E 1994). Although the wooded areas used by the colonies provide only marginal habitat, the use of the colony prior to, and the attempted resettlement of the colony following Hurricane Hugo, may provide some insight that the availability of suitable habitats in the Cooper River region is limited. Removal of the wooded vegetation would eliminate any future potential for colony establishment on site and thus must be considered as a negative impact. Loss of this area as potential habitat does not constitute a large impact. Viewed as a cumulative impact, however, with the loss of other potential habitat in the Charleston Harbor, it constitutes a measurable impact (i.e., loss of habitat).

Sea Purslane, a plant species classified as a state species of concern, would likely be eliminated as a result of implementation of Concept 3, since the Marine Industrial Park is proposed for development at the present location of this species. Since this species is not classified as threatened or endangered, no legal protection exists. The Redevelopment Authority, or other entity charged with redevelopment, may choose to relocate this species to another suitable area; however, its current legal status will not require this.

Two bat species of concern have been identified as potentially occurring on site (Duncan 1995; Strange 1995). Impacts to these species could result from demolition of buildings which provide roosting habitat for the bats. Although no evidence exists indicating either species occupies buildings on-base, the bats generally occur in the Charleston Harbor area. As a result, surveys likely will be required by the USFWS prior to demolition of any buildings by a redeveloper. If the surveys do result in the identification of species, mitigation measures (i.e., creation of other similar nesting sites) may be required. Currently, both species are candidate species and as such are not protected under the Endangered Species Act.

Minor impacts to estuarine species are expected from implementation of Concept 3. The annual or biannual dredging currently performed around the naval piers out to the main

ship channel prohibits the development of mature benthic communities. The benthic organisms likely occurring in this area are short-lived species that are adapted to recurrent disturbance and are capable of rapid recolonization. Although no data on light levels to benthic communities are available, it is unlikely that there is significant primary production at the dredge depths currently maintained in the proposed project vicinity due to the persistent high turbidity and color levels of Cooper River waters. Therefore, shading caused by construction of the Cargo Terminal would not have a significant impact on benthic algal populations. The Cargo Terminal pilings would provide hard substrate, which would enable establishment of a permanent hard bottom estuarine community and promote increased biological diversity in the Cooper River. Hard bottom communities consist primarily of filter feeding organisms that have beneficial effects on water quality.

Following the development and approval of the actual Marine Cargo terminal design, it will be necessary to consult with the USFWS and National Marine Fisheries Survey to evaluate impacts to marine mammals, fish, and turtles. Prior to implementation of any development into the Cooper River, both agencies will need to concur that there will be no significant impact as a result of construction and operation of the facility. Each agency will have project review as part of the Section 10 permitting administered by the U.S. Army Corps of Engineers. Any construction activities will have a set of conditions as part of permit approval.

Any additional terrestrial species which the USFWS determines to potentially occur on site will also need to be evaluated and mitigated prior to the issuance of necessary permits.

4.2.1.1 Alternative Reuse Scenario 3: Development Concept 3A

Vegetation

Impacts to existing vegetation in the northern portion of the Base would be the same as for Concept 3. However, this plan results in fewer acres of vegetation being removed in the southern portion of the Base than does Concept 3, particularly wetland vegetation and wooded upland areas adjacent to Shipyard Creek (see Table 4-2). Since the more developed areas in the southern part of the Base would be affected by Concept 3A, a greater amount of landscaped vegetation and maintained lawns would be impacted, but this would not represent a significant loss.

Wildlife

Development Concept 3A would result in less impacts to wildlife resources in the southern portion of the Base than Concept 3 due to the retention of much of the existing vegetation and habitat along Shipyard Creek and in wetland areas. Effects on threatened or endangered species (i.e., Least Tern) would be similar to that for Concept 3.

4.2.1.2 Alternative Reuse Scenario 3: Development Concept 3B

Vegetation

Redevelopment associated with Development Concept 3B will be focused on areas of the Base which are currently developed. With the exception of a few areas, this will result in little or no impact to the vegetation on site. Vegetation on the northern portion of the base consists primarily of landscaping, with the largest open space being the existing golf course and adjacent officer's housing area. Development of these areas for Cultural Park uses under Concept 3B will have no significant impact on vegetation. The southern portion of the base would be relatively unaffected by implementation of Concept 3B, with the exception of locating new structures on the existing dredge disposal area. This would necessitate the removal of most of the unmaintained herbaceous successional vegetation in this area. Based on the conceptual layout presented in the illustrative site plan, none of the wooded undeveloped areas toward the southern end of the base would, however, be impacted.

Wildlife

Because Development Concept 3B is primarily restricted to previously disturbed lands, little impact to wildlife resources would result from its implementation. Some lesser mobile species could be impacted due to actual disturbance of the dredge disposal area, and loss of the area as habitat would likely impact smaller mammals that utilize the area.

Threatened and Endangered Species

Neither the active Least Tern colonies nor the inactive wading bird colonies on the Base would be impacted by Concept 3B. The illustrative site plan for Concept 3B indicates that both of the buildings which contain nesting Least Tern colonies will be retained for redevelopment, and the wooded areas which wading bird colonies have historically utilized would be retained as open space.

4.2.2 Alternative Reuse Scenario 1

Vegetation

Implementation of this alternative would not impact the existing vegetation at the base. This plan recommends using the existing facilities on site, without major capital investment in road and utility infrastructure, parking, renovation, and landscaping.

As a potential positive impact, much of the Base would not be redeveloped following implementation of this alternative. This may present the option to remove the structures presently on the base, and allow reversion to natural vegetation. This would be considered as a positive impact to the ecosystems on site as vegetative community size and structure would increase.

Wildlife

Implementation of this alternative would not impact the wildlife communities on the base. The primary vegetated areas on the Base would remain unaffected, thus not affecting residual wildlife populations. Additionally, as discussed above, the potential for increasing the vegetative cover on Base would have a direct positive increase on the wildlife populations.

Threatened and Endangered Species

Implementation of this Alternative could impact, either negatively or positively, several of the species of concern on the base, specifically, the Least Tern and the wading bird colonies and candidate bat species. The Least Tern nesting colonies are each situated on buildings that are not currently proposed to be utilized under this alternative. Impact to the Least Tern colonies and potential bat roosts would be dependent on whether or not the buildings are left standing or demolished. Demolition of the buildings would eliminate the nesting/roosting habitat, which would prove to be an adverse impact to the local populations. Mitigation for this plan should, at a minimum, consider abandoning these buildings in place (see Section 4.2.6), and surveys prior to demolition to determine the presence/absence of the bat species of concern.

The location of the recent wading bird colonies on the Base are not impacted by this alternative. Based on this alternative, almost all of the land surrounding the colony sites would not be utilized. By eliminating much of the activity in the vicinity of these sites, less disturbance would result and the wooded areas toward the southern end of the Base would become more suitable and more attractive as a colony location.

4.2.3 Alternative Reuse Scenario 2

Vegetation

Implementation of this alternative would result in similarly negligible, and potentially positive, impacts as identified for Alternative Reuse Scenario 1. No significant impacts would result from management of the existing resources on the base, and the potential exists for the vegetative community at the base to be improved and expanded. Landscaping improvements may increase the overall green space on the base; however, the increased value would be almost entirely aesthetic.

Wildlife

Implementation of this alternative would have little impact on the wildlife communities on the base. As with Alternative Scenario 1, the proposed redevelopment at the base is restricted to areas that are currently developed.

Threatened and Endangered Species

Implementation of this alternative would result in similar impacts, as discussed under Alternative Scenario 1. No significant adverse impacts would occur to any of the species of concern and, in fact, less disturbance to the significant communities may increase the suitability of the area for reestablishment of the wading bird colony.

4.2.4 Cumulative Impacts

Implementation of Alternative Reuse Scenario 3 would result in the loss of vegetation and associated loss of habitat on the existing base. From the standpoint of evaluating impacts to existing resources on the west side of the Cooper River as a whole, this action would have significance, as extensive development has occurred along the river, and little undeveloped land remains. When evaluating impacts based on the entire Charleston Harbor area, the significance of the impact is reduced by the availability of other similar habitat. Undeveloped lands are present across the Cooper River from the naval base on Clouter Island and on Daniel Island. These available habitats would be readily accessible by the avian fauna found on or near the base. Unfortunately, these available habitats are also slowly being developed, which minimize the available habitat for species vacating the Base.

Cumulative loss of native habitat (i.e., beaches) for Least Tern nesting has resulted in the species increasingly using roof tops throughout South Carolina. Currently 60% of nesting

pairs in the state of South Carolina use roof top locations with gravel roofing (Murphy 1994). However since Hurricane Hugo, many buildings which previously had gravel roofs have been re-roofed with an impermeable rubber/tar roof. This is reducing the amount of viable tern nesting habitat statewide. Although the proposed demolition of structures at the base with identified Least Tern colonies (Enlisted Club and Warehouse 224), singly would not be significant, it would contribute to the cumulative statewide trend of Least Tern nesting habitat disturbance/displacement.

The development of the base for proposed industrial/marine uses does minimize potential cumulative impacts, assuming that these developments would be established elsewhere in the community (i.e., Cargo Terminal at Daniel Island). By using a previously disturbed (i.e., industrial) area, impacts to undeveloped lands are restricted.

4.2.5 Mitigation Measures

With the removal of the most of the areas of undeveloped shrubby and woody vegetation from the base, little if any mitigative measures can be proposed for the non-wetland vegetated portions of the base. The losses associated with this removal must be evaluated as a long-term impact.

To maintain upland wildlife diversity in the area following implementation of Alternative Scenario 3, nesting boxes could be installed in an attempt to re-establish avian species on site. However, with the removal/alteration of most of the woodlots on site, any mitigation would likely be attractive to avian species typical of more urban areas.

Mitigation measures to minimize impacts resulting from the implementation of Alternative Reuse Scenario 3 revolve around modifications to the final engineering design to avoid wetland areas. These measures are discussed more fully in Section 4.3.5.

While some mitigation for threatened species or species of concern would be possible, implementation of Alternative Reuse Scenario 3 would eliminate habitat for others. Protection/mitigation of the Least Tern colonies would be an important part of the redevelopment of the base. Pursuant to the State Endangered Species Act and the Federal Migratory Bird Treaty Act, these Least Tern nesting areas could not be disturbed during nesting periods of April to October (Maybry 1994). If the existing buildings supporting nesting colonies must be removed, other proposed or existing buildings should be designed to be conducive to tern nesting. This would include placing pea-size white gravel on the roof, providing elevated shaded structures, and providing safety features such as covered drainspouts and parapets to minimize chick mortality. To the extent practical, new habitat for the Least Tern should be provided before destruction of existing buildings used for nesting purposes.

Due to the removal of nearly all the wooded vegetation on the base, mitigation of the wading bird colonies is not feasible without significantly altering the layout of Reuse Scenario 3 to avoid these areas.

4.3 Wetland Areas and Floodplain

Both wetland areas and floodplain would potentially be impacted by the implementation of any of the alternative plans. Impacts to wetlands and floodplain can be mitigated either by avoidance of high quality areas, or creation of additional resource areas to offset any net loss. However, since no detailed engineering plans have been completed for any of the proposed reuse alternatives, mitigation measures are described in general terms only.

4.3.1 Alternative Reuse Scenario 3: Development Concept 3

Wetlands

Implementation of Development Concept 3 would impact the existing wetland resources on the Naval Base. As shown on Figure 4-2, the overlay of Concept 3 on the existing land use/vegetative cover indicates a potential impact to approximately 20.5 acres of wetland, primarily freshwater scrub-shrub and wooded wetlands with minor amounts (approximately 4.5 acres of estuarine wetland). The majority of this impact will be derived from construction of the Maritime Industrial Park. This proposed use impacts 15.2 acres of wetland, mostly palustrine forested wetland. These forested wetlands have been identified as historically containing wading bird nesting colonies. These impacts are discussed previously in Section 4.2. The industrial park also impacts 1.6 acres of estuarine emergent wetland associated with the upper reach of Shipyard Creek, and 0.5 acres of the estuarine/palustrine wetland separated from Shipyard Creek by the shell roadway. The Cargo Terminal, rail yard, and marina account for the remainder of the wetland impact, of which approximately 2.5 acres is estuarine wetland. Minor plan alterations could be developed to avoid impacts to estuarine wetlands. Significant changes would be necessary to avoid the palustrine forested wetlands. Although the Cooper River is designated as an estuarine subtidal system (E1), this analysis does not consider the construction of the marine cargo terminal as an impact to wetlands. Due to the continued dredging and maintenance activities conducted at the Base, the area is not a defined wetland. However, any activity in the Cooper River falls within the jurisdiction of the USACE under Section 10 regulations of the Rivers and Harbors Act of 1899. This statute governs any activity on a navigable water. Based on CWA regulations,

this net loss would need to be mitigated through wetland creation, replacement, or enhancement. Because of the overall development of the Naval Base, it will be difficult to mitigate wetland loss through on-site wetland creation. It may be necessary to consider either improvement or protection of existing wetland systems. Prior to any development in these wetlands, permits would need to be acquired from the SCDHEC and USEPA. SCDHEC Office of Ocean and Coastal Resource Management (OCRM) will review all plans affecting wetland areas. A Section 404 permit would also be needed from USACE. This will require mitigation of all lost wetland acreage due to reuse activities.

The tidal marshes and flats of Noisette Creek and Shipyard Creek would be relatively unaffected by the proposed plan. These areas represent the most sensitive and most significant wetland resources on site. Railroad trestles would be built across Shipyard Creek to improve access to the proposed Cargo Terminal, but proper engineering and construction can minimize long-term impacts to wetlands and floodplain. The engineering design will need to ensure that the supports for the bridge are spaced wide enough apart so that the tidal flow will not be impacted. The tidal ecosystem would not be significantly impacted except during actual construction. The SCCC (now part of Office of Ocean and Coastal Resources Management [OCRM]) has also raised concerns regarding the potential for the construction of the bridge to limit access to waters of the state. Construction of the bridge across Shipyard Creek would likely preclude any future access to the upper reaches of the creek (see Section 5.2).

One potential impact that may occur due to the implementation of Development Concept 3 is a hydrologic change to wetlands that are currently estuarine. If extensive storm water retention structures are developed across the base area, and discharged in only a few locations, receiving wetlands may begin to show more freshwater characteristics. Invasion of cattails (*Typha* spp.) and common reed (*Phragmites australis*) may degrade the wetland quality. A tidally influenced salt or brackish marsh typically is one of the most productive ecological communities. Any freshwater discharge to a nonfreshwater wetland will need to follow the regulations as set out in the SCCC Stormwater Management Plan.

The detention basins that are currently found across the site are proposed to be maintained or replaced, since these serve an important hydrologic storage function.

Floodplain

The implementation of Concept 3 may significantly impact the flood retention ability of the base. As identified in Figure 3-4, the 100- and 500-year floodplain occupy almost the entire base. Due to the Cooper River being adjacent to the base, paving much of the base for

port-related redevelopment would not significantly change these flood levels. However, altering the topography of the site may significantly alter the flood retention ability of areas on site, and as a result alter the 1-, 5-, and 10-year flood elevations. The impact would be more directed to individual storm events and the land's ability to store and transmit storm/flood waters away from the base. Disturbance of wetland areas could increase flooding in adjacent on-Base areas. As specific redevelopment plans are finalized (i.e., Marine Industrial Park, Intermodal Rail Yard), hydrologic calculations would be required to determine actual flood retention/detention requirements. Any loss of flood retention ability should be counterbalanced by the development of retention/detention ponds or basins. The storage volume required for storm water control is approximately 60 acre-feet, which would hold the first inch of runoff from the southern portion of the base. Using the standard TR-55 detection storage routine, approximately 60 acre-feet would be required for the 10-year event and 36 acre-feet for the two-year event.

About 25 acres of the proposed Marine Cargo Terminal extending into the Cooper River is in Flood Zone V7. Flood Zone V7 is a Special Flood Hazard Area along the coast which is inundated by the 100-year flood and has additional velocity hazards associated with waves of 3-foot amplitude or greater (FEMA 1986). In order to avoid impacts, the requirements and structural criteria in CFR 44 60.3 will be followed. It should be noted that portions of the current piers are also located within Flood Zone V7.

4.3.1.1 Alternative Reuse Scenario 3: Development Concept 3A

Wetlands

Implementation of Development Concept 3A would significantly reduce the loss of wetland areas due to redevelopment of the Base as compared to Concept 3. As shown on Figure 4-3, the overlay of Concept 3A on existing land use/vegetative cover indicates that about 9.3 acres of wetlands would be disturbed. As such, this plan will need to be approved and permitted under Section 404 of the Clean Water Act.

Tidal marshes and mudflats of Shipyard Creek would not be affected by Concept 3A. Specific impacts from the construction and operation of the proposed road/rail access across Shipyard Creek would be addressed by SCDHEC, OCRM, and USACE during the permit review and approval process.

Floodplain

As with Concept 3, Concept 3A may affect the flood retention ability of the Base due to filling activities to increase the elevation of the Cargo Terminal to 10 to 12 feet MSL. Similarly, Development Concept 3A would also require approximately 60 acre-feet of storage volume to accommodate the first inch of storm water runoff from the 10-year event, and approximately 36 acre-feet of storage volume to accommodate the 2 year event. A portion of the Cargo Terminal would be within Flood Zone V7; however, adherence to CFR 44 60.3 will minimize any impacts.

4.3.1.2 Alternative Reuse Scenario 3: Development Concept 3B

Wetland Areas

This concept could impact approximately 3 to 4 acres of wetlands on site. However, the majority of wetlands potentially impacted are small wetlands within extensively developed areas and likely would not be developed further (see Figure 4-3A). The remainder of these wetland areas would be preserved for open space, recreation, or storm water management. It is possible that with sensitive planning and design, redevelopment of the Base pursuant to Concept 3B would affect none of the wetlands.

Floodplains

As with Concepts 3 and 3A, all new construction under Concept 3B in the northern and southern portions of the Base will occur within the 100-year floodplain. However, because the southern part of the Base will not be filled for development of the Cargo Terminal (as in Concepts 3 and 3A), no impact to floodplain elevations would result.

4.3.2 Alternative Reuse Scenario 1

Wetlands

Implementation of this alternative would have no significant impact on the wetland resources on the base and could in fact result in positive impacts. Proposed activities utilize existing features on the base thus precluding the potential for disturbing wetland areas due to construction activities. Additionally, the potential exists for restoring wetland acreage in the unutilized lands.

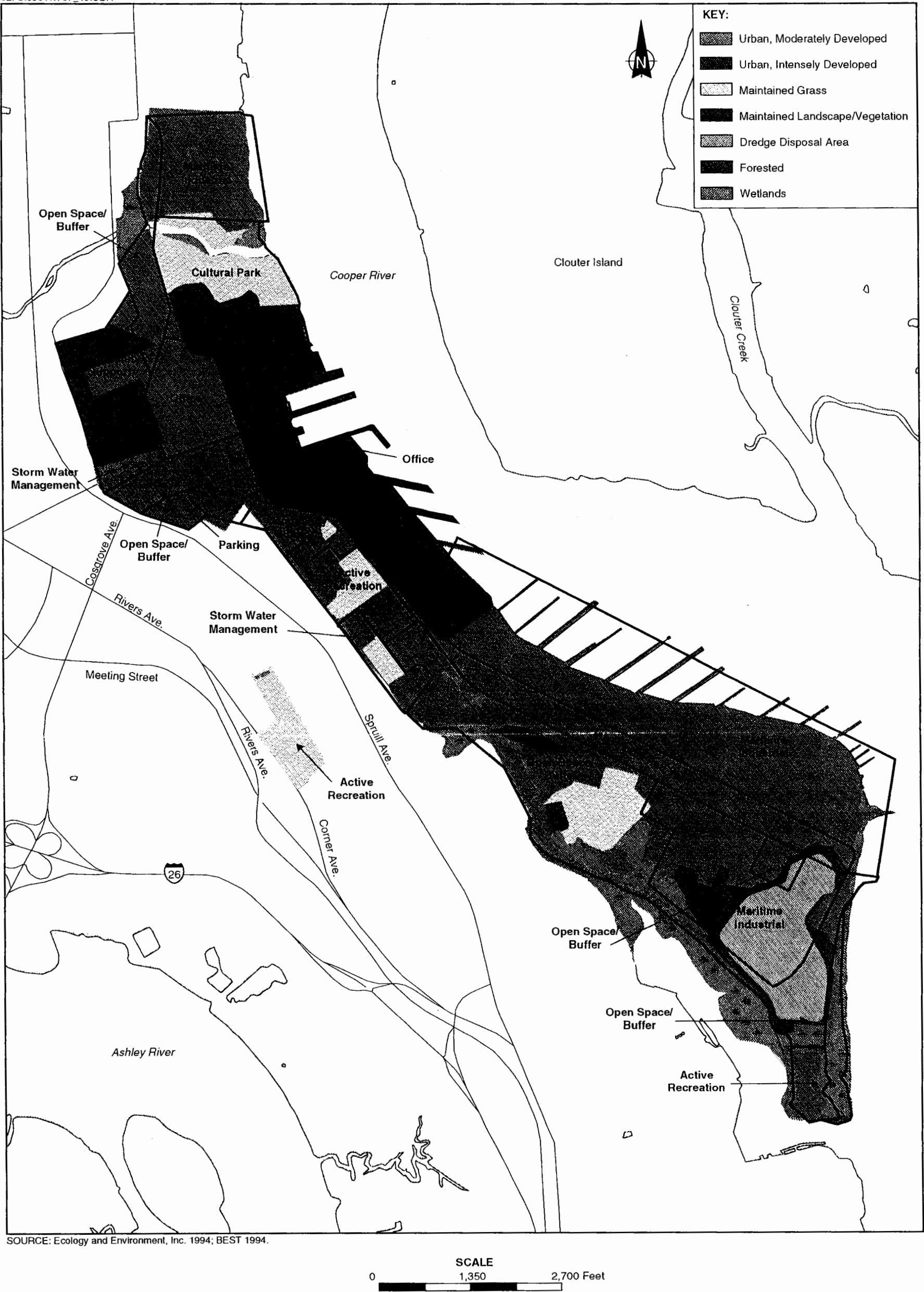
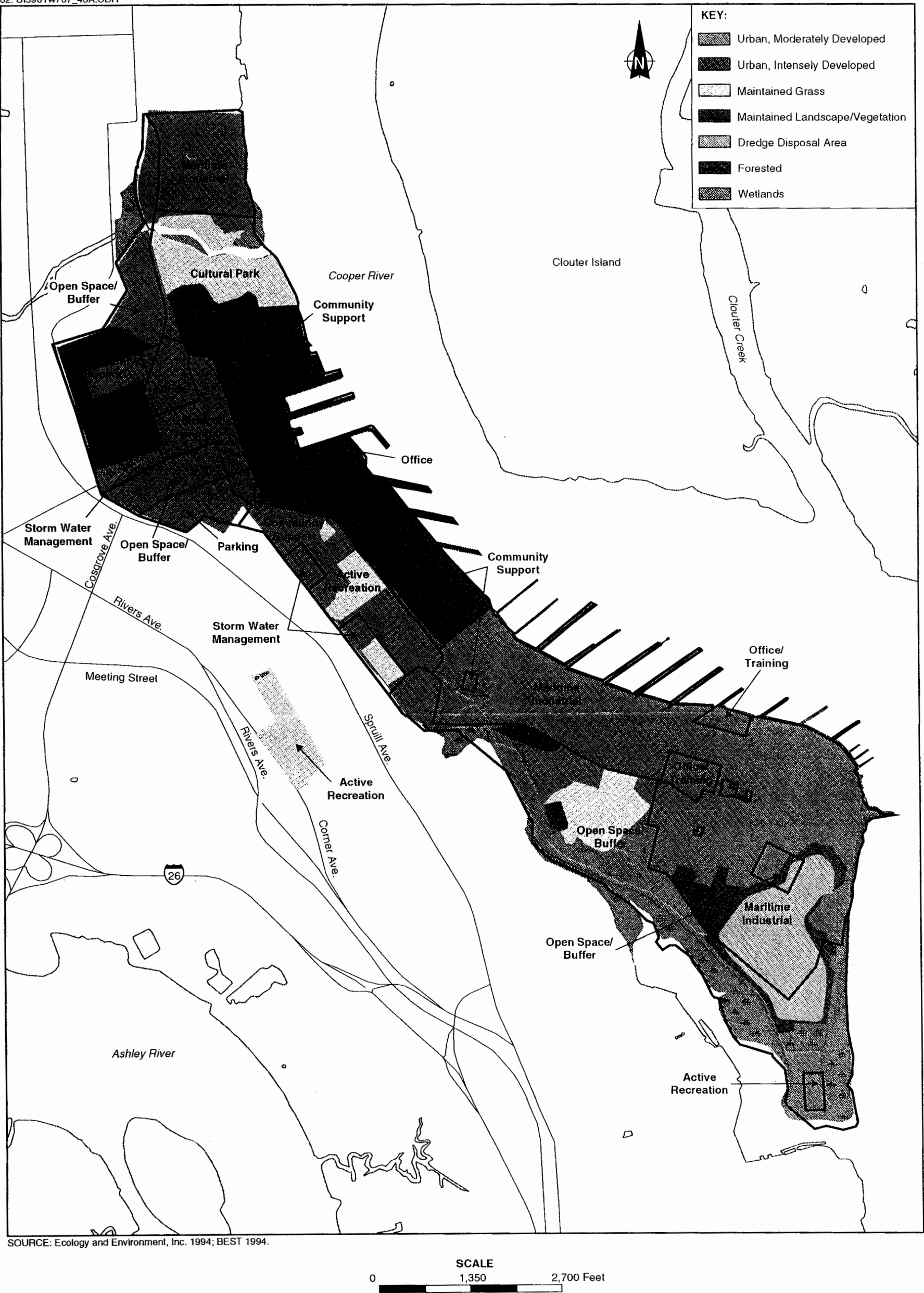


Figure 4-3 EXISTING VEGETATIVE COVER WITH DEVELOPMENT CONCEPT 3A

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SOURCE: Ecology and Environment, Inc. 1994; BEST 1994.

Figure 4-3A EXISTING VEGETATIVE COVER WITH DEVELOPMENT CONCEPT 3B

Floodplain

Implementation of this alternative would have no impact on the existing floodplain located on the base. No significant additional structures or impervious surfaces would be constructed. Conditions following implementation of this alternative would be identical to the existing conditions.

4.3.3 Alternative Reuse Scenario 2

Wetlands

The implementation of this resource plan would result in no significant impacts to wetland areas on base, and could in fact result in positive impacts with the potential for positive impacts including wetland enhancement.

Floodplain

As with Scenario 1, this alternative would have no impact on the existing floodplain located on the base.

4.3.4 Cumulative Impacts

The implementation of Development Concept 3 would result in the net loss of approximately 20.5 acres of wetlands. Most of these impacts would occur to the palustrine wetlands toward the southern end of the base. Only minor impacts would occur to the estuarine wetlands. On a regional level, the loss of the wetland acreage would be minor. However, the loss does constitute the removal of wooded wetland area which is not common on the western shore of the Cooper River. Extensive wetland areas are found along the Cooper River, especially across the river from the base and on Daniel Island.

Cumulative impacts to the floodplain on the base would occur as additional impervious areas would replace vegetated lands. Vegetated areas tend to buffer adjacent developments from flooding through floodwater storage.

4.3.5 Mitigation Measures

The avoidance of wetlands is preferable to mitigation. Mitigation of wetlands impacts is considered only after all policies of the OCRM and the Coastal Zone Management Act have been addressed and the policies are found to allow an alteration to wetlands. A mitigation plan would be submitted by the Redevelopment Authority or other development entities and

approved by OCRM for all projects which (1) require a coastal zone consistency determination (i.e., for issuance of a Section 404 permit by USACE), and (2) impact federally defined jurisdictional wetlands in the coastal zone, unless the OCRM determines that the impacts are so minimal as not to warrant mitigation (SCCC 1993). Since a net loss of wetlands is likely to occur through the implementation of Concepts 3 and 3A, the Redevelopment Authority, or another entity charged with redevelopment, would be required to apply for a USACE Section 404 permit. [Additionally, a Section 10 permit will be required for work in the Cooper River and Shipyard Creek.] OCRM will conduct a coastal zone consistency determination on the issuance of either permit.

Wetlands will need to be mitigated if they would be filled, dredged, excavated, cleared, or ditched. Mitigation options include (1) protection, (2) restoration, (3) enhancement (buffering), or (4) creation, or a combination thereof. Any other form of mitigation will be evaluated on a case-by-case basis. Protection and enhancement is intended to provide additional protection to the values and functions of the natural system. Heavy commercial and industrial developments must maintain an average 75-foot buffer area (SCCC 1993). The creation of wetlands involves the conversion of uplands or nonjurisdictional wetlands into wetlands. Restoration of degraded systems involves improving wetland conditions on lands previously altered by man-made changes in vegetation, hydrology, or soils. The requirements for each of these options, as well as monitoring and compliance is included in the South Carolina Coastal Council Chapter 30 (Statutory Authority, 1976, Code Section 48-39-90).

One possible approach to the mitigation of wetland loss at the base would be to set aside areas on the base to restore to original conditions. Prior to Navy development of the base, much of the project area was tidal influenced wetland. Extensive fill has altered the hydrology on site. A representative mitigation action would be to remove the shell/gravel drive which rings the southern portion of the base. This action would help restore tidal influence to a larger area. This action would need to be coordinated with proposed reuse activities as portions of the road would continue to be utilized.

Replacement in kind is not as feasible an option because of the general lack or absence of suitable sites in the area. Additionally, the wetlands that are present on site are the direct result of anthropogenic activities, and should not be considered representative of native wetlands. Restoring additional lands to tidal marsh would allow for re-establishment of natural conditions that historically were found on site.

With the proposed development of the southern tip of the base as part of Alternative Reuse Scenario 3, floodplain mitigation, in the form of storm water management, has been proposed and will be necessary. The total amount of water that will need to be managed will

be based on hydrologic calculations concerning the actual amount of impervious and altered land surfaces that are ultimately proposed for the developed marine cargo area. Approximately 60 acre-feet of retention will be required to accommodate the first inch of runoff from the 10-year event. The necessary improvements to the storm water management system are discussed further in Section 4.10.

As mitigation to construction in Flood Zone V7, CFR 44 64.3 requires "that all new construction and substantial improvements in Flood Zones V1 through V30 (including V7) be elevated on pilings so that 1) the bottom of the lowest horizontal structural member of the lowest floor (excluding pilings and columns) is elevated to above the base flood elevation; and 2) the pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement..." (CFR 44 64.3).

4.4 Water Quality and Hydrology

Implementation of Base redevelopment would result in negligible impacts to water quality and hydrology in some areas of the base, but will have considerable impact in other areas. At this time, potential impacts can only be estimated due to the conceptual nature of the plan.

4.4.1 Alternative Reuse Scenario 3: Development Concept 3

Surface Water Hydrology

Implementation of Concept 3 would impact surface water hydrology primarily from construction of the Marine Cargo Terminal, which would extend 82 acres into the Cooper River. The significance of impacts from construction and operation of this facility depend on the final design. Based on preliminary discussions with regulatory agencies, the only feasible option would be to construct the terminal on pilings, because engineering and regulatory constraints would likely prohibit filling of such a large area. If constructed on pilings, the impact of the terminal on the hydrology of the Cooper River would probably be similar in comparison to that of the existing naval piers, of which 15 extend into the river as the proposed Cargo Terminal. Therefore, depending on the number and size of the support pilings, the terminal would alter the flow characteristics of the Cooper River and cause nearshore sedimentation similar to or somewhat greater than that of the existing naval piers.

The dredging requirements associated with construction and operation of the Cargo Terminal would be affected by the area of the Cooper River covered by the terminal, the need

for a turning basin, and potential shoaling of the ship channel. The area between the shoreline and the main channel requiring dredging would be approximately 80 acres less than the area currently subject to maintenance dredging, because dredging would not be required beneath the terminal. Dredging would be required to create and maintain a turning basin to serve the Cargo Terminal and additional channel maintenance dredging could be required if the Cargo Terminal increases shoaling within or adjacent to the main ship channel. However, until details on the design of the terminal and turning basin are available and hydrological modeling is performed, the net change in dredging requirements due to implementation of Development Concept 3 cannot be definitively determined.

Because the Cooper River is a navigable waterway, a USACE Section 10 permit would be required prior to any construction. A Section 404 permit may also be required from the USACE, potentially pursuant to the Tulloch Rule. Justification for the terminal extending out into the river and detailed engineering drawings would be required as part of the Section 10 permit application. To minimize impacts to the flow of the Cooper River and channel maintenance, the Cargo Terminal would be located no closer than 350 feet from the maintained channel. No sloughing of sediments from under the Cargo Terminal into the channel would occur from this distance.

Surface water hydrology impacts would be negligible to the two tidal creek tributaries to the river. As proposed in Concept 3, piling would be necessary within Shipyard Creek to support the roadway and railway bridges to the proposed Marine Cargo Terminal. These bridges would likely have no significant impact to the hydrology of the creek, although hydrological modeling will be needed to determine the specific effects once engineering designs are prepared.

Water Quality

Implementation of Development Concept 3 would result in short-term negative impacts and long-term improvements to water quality. Construction of the Marine Cargo Terminal in the Cooper River and the railway/highway bridges over Shipyard Creek would result in significant turbidity and sedimentation (due primarily to pile-driving activities) in the project vicinity and downstream areas for the duration of construction. Operation of the Cargo Terminal would have beneficial long-term effects on the water quality of the Charleston estuary because of the termination of fueling operations and ship maintenance currently conducted at the naval piers, and reductions in the frequency or amount of dredging required. Because no fueling or maintenance of cargo ships would be performed at the Cargo Terminal, operation of this facility would have more benign effects on water quality than the fueling

operations and ship maintenance performed at the existing naval piers. In addition, termination of all Navy activities would eliminate the potential for unknown or unpermitted industrial wastewater discharges to the Cooper River, as is currently suspected.

Implementation of Development Concept 3 would also benefit the water quality of surrounding water bodies through comprehensive improvements to the wastewater and storm water sewer systems, which would prevent the discharge of untreated sanitary or industrial wastewater or storm water. Refueling activities at the Base would also be terminated which would minimize the potential for fuel spills affecting the Cooper River.

Groundwater

No adverse impacts to groundwater would be realized from the implementation of Concept 3. Most areas on site are projected to be either covered with impervious surface as part of the creation of the Marine Cargo Terminal, or used for flood retention areas. The soil in the vicinity of the naval base is a silt/clay that is fairly impervious. Little or no recharge of significant groundwater aquifers occurs near the Base. Remediation of contaminated areas identified during the RFI process will result in improvements to groundwater quality.

4.4.1.1 Alternative Reuse Scenario 3: Development Concept 3A

The principal difference between Concept 3A and Concept 3 impacts on hydrology and water quality is that the area of the Cargo Terminal would extend further into the Cooper River under Concept 3A. The terminal would extend 200 feet or 50 acres further into the river under Concept 3A.

The extension of the terminal further into the Cooper River would have potentially greater impacts on the flow and sedimentation regimes of the Cooper River than those of Concept 3. However, this additional extension of the terminal would likely have converse effects on dredging requirements. The area between the berthing edge of the terminal and the ship channel that would require maintenance dredging would be reduced by 50 acres, but the increased number of pilings needed to support the terminal, and the closer proximity of the terminal to the channel, may induce greater shoaling and require more frequent channel maintenance dredging. The specific impacts of the Cargo Terminal on river flow, sedimentation, and dredging requirements cannot be determined until detailed design information is available and hydrologic modeling is completed.

Water quality impacts of Concept 3A would be slightly greater during construction due to the additional pile-driving activities associated with construction of the Cargo Terminal; however, long-term impacts to water quality would be similar to those of Concept 3.

4.4.1.2 Alternative Reuse Scenario 3: Development Concept 3B

Implementation of Concept 3B would have minimal impact to local water quality and hydrology, primarily because no road/rail crossing is included over Shipyard Creek and there would be no construction in, or filling of, portions of the Cooper River. However, temporary sedimentation impacts will result from the removal of several piers in the Cooper River. As discussed for Development Concept 3, termination of Navy activities would eliminate the potential for unpermitted wastewater discharges to the adjacent water bodies.

4.4.2 Alternative Reuse Scenario 1

Surface Water Hydrology

Implementation of this alternative would have no significant impact on the surface water hydrology in the vicinity of the base.

Water Quality

Implementation of this alternative would have generally positive impacts on the existing water quality in the area. As discussed for Concept 3, elimination of Navy activities would eliminate any discharges related to current Base operation.

Groundwater

No adverse impacts to groundwater would result from the implementation of this alternative. Remediation of contaminated areas identified during the RFI process would result in improvements to groundwater quality.

4.4.3 Alternative Reuse Scenario 2

Surface Water Hydrology

Implementation of this alternative would have minimal impacts to the surface water hydrology, since existing conditions would be essentially maintained with only minor alterations.

Water Quality

Implementation of this alternative would not result in any impacts to water quality. Termination of the Navy activities would, however, eliminate any discharges related to current Base operations.

Groundwater

Implementation of this alternative would not result in any adverse impacts to groundwater resources in the project area. Remediation of contaminated areas will result in improvements to groundwater quality.

4.4.4 Cumulative Impacts

The implementation of Alternative Reuse Scenario 3 would not result in significant cumulative impacts to water quality in the project area. There are no other projects being proposed which will involve filling of the Cooper River or otherwise affect its hydrology (Gore 1994). The potential for fuel spills from ship collisions or accidents would increase from existing conditions, since the number of vessels docking per year at the terminal (under Concepts 3 and 3A) would be greater than the number of naval vessels docking at the existing piers. However, the potential for fuel spills resulting from fueling operations, which is much greater than that caused by collisions, would be eliminated because no fueling facilities would be included as part of the Cargo Terminal. Thus, operation of the Cargo Terminal would have a potentially beneficial cumulative effect on water quality.

Construction of the Cargo Terminal, as proposed in Concepts 3 and 3A, would have a minor to moderate cumulative impact on the sedimentation and flow regime of the Cooper River, depending on the final design. Hydrologic modeling will be used to select a design that would minimize the overall impact of the terminal on the hydraulic properties of the river and the need for additional maintenance dredging.

With the construction of additional impervious surfaces, additional storm water control structures would be necessary on the property. However, Base redevelopment would not result in significant increases in storm water runoff in the Charleston Harbor area.

4.4.5 Mitigation Measures

The mitigation for impacts to surface water hydrology and quality will be developed during the USACE, SCDHEC, and OCRM permitting processes following submission of project plans and detailed specifications. Concepts 3 and 3A propose building the Marine

Cargo Terminal on piling, rather than building a bulkhead and filling behind it. This would serve to allow the extension of the Cargo Terminal out into the river while not significantly altering the river's hydrology from existing conditions. Concept 3B does not include a Cargo Terminal.

Impervious surface area on the Base would increase with the implementation of Alternative 3. This would require an additional 60 acre-feet of storm water retention in the form of retention and detention basins designed in accordance with the South Carolina Stormwater Management and Sediment Reduction Act, and OCRM review.

Adherence to the conditions of CFR 44 64.3 will also minimize impacts from construction and operation of the Marine Cargo Terminal on Cooper River hydrology and water quality.

4.5 Topography, Geology, and Soils

4.5.1 Alternative Reuse Scenario 3: Development Concept 3

Implementation of Concept 3 would not adversely impact soils on the base property; however, the proposed filling of the Cargo Terminal area and Intermodal Rail Yard to 10 to 12 feet above MSL would significantly affect the site topography. Impacts would be particularly noticeable at the State Department facilities, which would not be filled to this elevation and, thus, would be surrounded by higher ground.

Much of the land surface on the property has been altered by construction or deposition of dredge material. Approximately 71 acres at the southern end of the property has served as a dredge material deposition area for many years, and surficial materials in this area are loosely consolidated clays poorly suited for load support. The nature of the soils at the southern end of the property will have an impact on the development of the Marine Cargo Terminal, the Intermodal Rail Yard, and the Marine Industrial Park as proposed by Concepts 3 and 3A. Structures planned to be built in these districts would likely require support on pile foundations. Pilings would be required at regular intervals beneath the cranes or laydown area over open water and marsh areas; however, piles may not be necessary beneath floor slabs, utility poles, rigid pavement, and other structures.

Surcharging the unconsolidated soils may prove suitable in some areas at the southern end of the base. Soil surcharging involves the placement of weight on surface soils for purposes of consolidating the soils and displacing groundwater in order to increase soil stability. Substantial amounts of weight may be required to stay in place for extended periods of time (i.e., 10 years or more), thus influencing the final engineering designs.

Soil erosion potential on the base property is minimal as the property is relatively flat and most or all of the land has been previously disturbed in some manner. A potential for soil erosion exists where land would be graded for construction or demolition.

As Concept 3 is implemented, site-specific analysis of soil conditions would be conducted in conjunction with the development of soil erosion and sediment control plans. The soil erosion and sediment control plan would need to include descriptions of acceptable post-development storm water runoff rates and provide general drainage design criteria, and would need to comply with the South Carolina Stormwater Management and Sediment Reduction Act of 1991.

4.5.1.1 Alternative Reuse Scenario 3: Development Concept 3A

Implementation of Concept 3A would result in similar impacts as discussed for Development Concept 3.

4.5.1.2 Alternative Reuse Scenario 3: Development Concept 3B

Since neither the Cargo Terminal, Intermodal Rail Yard, nor the Marine Industrial Park is proposed in this plan, impacts to topography, geology, and soils would be negligible. Development in the northern portion of the property would create impacts similar to that of Concept 3. Since filling activities on the land adjacent to the Cooper River are not proposed in Concept 3B, development on loosely consolidated soils in the southern portion of the property is avoided, and there would be no need for the mitigation measures (driving pilings, surcharging) which were required in Concepts 3 and 3A. Other impacts related to lands which would be graded for construction or demolition, or site-specific storm water runoff would require mitigation measures similar to those in Concepts 3 and 3A.

4.5.2 Alternative Reuse Scenario 1

Since this alternative would not result in any new construction or development, the existing topography, geology, and soils at the base would not be affected.

4.5.3 Alternative Reuse Scenario 2

Implementation of this scenario would result in similar impacts as discussed for Concepts 3 and 3A.

4.6 Air Quality

The reuse and redevelopment of the Base would impact air quality in two ways. Short-term impacts would occur due to emissions from demolition and construction activities associated with facility reconfiguration for each alternative. Long-term impacts would occur due to emissions from stationary and mobile sources associated with the operation of facilities under each alternative.

Alternative Reuse Scenario 3 (including Concepts 3, 3A, and 3B), would have the greatest impact on air quality (when compared to Alternative Reuse Scenarios 1 and 2). The type of activities under Alternative Reuse Scenario 3 are similar to the current use of the property; therefore, similar emissions by pollutant type are anticipated. The quantity of emissions and resulting ambient air impacts are dependent on level of activity. A description of the level of activity for the proposed Marine Industrial Park is not available at this time. However, estimates of cargo volume through the proposed marine terminal (for Concepts 3 and 3A) are available and were used to estimate emission of air pollutants from this and associated activities.

Air Quality Regulations

The Clean Air Act of 1970 (CAA), 42 USC 7401 et seq., amended 1977 and 1990, requires that the EPA promulgate rules to ensure that Federal actions conform to the appropriate state implementation plan [section 176(c)]. These rules are known as the General Conformity Rule and are set forth in 40 CFR Parts 6, 51, and 93. A Base closure is considered a federal action and thus must be analyzed for general conformity rule applicability. This rule is only applicable in air quality control areas designated as nonattainment or maintenance. Since the Base is located in an attainment area for all pollutants, the General Conformity Rule does not apply. Although the General Conformity rule does not apply, other parts of the CAA must be addressed, such as compliance with permit programs.

Each reuse alternative would involve the construction or modification of point sources of air pollutants. In addition, transfer of existing facilities with permitted air emission sources would require modification of air permits from SCDHEC, which are issued pursuant to SCDHEC regulation 61-62, if the sources are to remain in operation after ownership transfer. Construction or physical modification of air emission sources would require a permit to construct prior to commencing construction or modification. Applications for these permits may be required to include a Prevention of Significant Deterioration (PSD) analyses if the proposed source emits pollutants above PSD applicability thresholds.

These analyses, if required would include estimation of air quality impacts at the Cape Romain National Wildlife Refuge (NWR), located 15 miles northeast of Charleston. This area is designated as a Class 1 wilderness area for air quality impacts. The EPA/SCDHEC designates areas as Class 1 to protect the air quality so as to protect sensitive plant and animal species, and the classification cannot be changed. The EPA has given the NWR this designation to protect its air quality. Any new emission source impacting the air quality must demonstrate that ambient concentrations anywhere within the Class 1 area will not exceed the maximum allowable increase of 2.5 micrograms per cubic meter of NO₂ annual average concentration.

This designation protocol comes from the Prevention of Significant Deterioration rule in the Clean Air Act. Prior to construction of a source that may impact a Class 1 area, the applicant must demonstrate through the permitting process that air quality in the Class 1 area will comply with all regulations. Since the estimate of these emissions and detailed source configuration data for use in dispersion modeling is speculative or not available at this time, it is not possible to estimate the impacts on Cape Romain. However, prior to constructing the facilities that comprise Alternative Reuse Scenario 3, each project will undergo an applicability determination for permitting purposes. If a full air quality analysis is required, it must be completed and the results must show compliance with regulations for the Class 1 area before construction can begin. Through this process, air quality will be maintained at the Cape Romain NWR.

SCDHEC does not regulate mobile source generated emissions (such as limiting vehicle miles travelled to control VOCs and subsequent ozone formation). Although mobile sources (ships, vehicles, and locomotives) are not specifically regulated by SCDHEC, they are not permitted to cause or contribute to any violation of NAAQS, as might occur at severely congested roadway intersections or through emission of VOCs and NO_x which can result in ground-level ozone formation.

The following subsections discuss the air quality impacts of each alternative. In many instances, data limitations prevent quantification of air quality impacts. These data limitations are due to a lack of detail in actual facility type, size, and capacity for each alternative.

4.6.1 Alternative Reuse Scenario 3: Development Concept 3

Development Concept 3 comprises an office district, shipyard, Marine Cargo Terminal, and Marine Industrial Park focusing on water dependent marine and port related land uses. Stationary source emissions associated with this type of use would include combustion emissions (NO_x, CO, VOC) from building heating equipment and the potential for

emission of air toxics from industrial shops in which solvent use may occur. Mobile source emissions, primarily the compounds NO_x, CO, and VOC, would be emitted from the marine vessels using the port facilities; railroad traffic using the proposed Intermodal Rail Yard; trucks servicing container and bulk vessels at the piers; trucks servicing the Intermodal Rail Yard; and by personally owned vehicle (POV) use during commutes to and from work.

Construction activities would occur as new facilities are built to satisfy requirements of the Marine Industrial Park or marine terminal. These demolition and construction activities would generate fugitive dust and construction equipment exhaust emissions. Approximately 72% of building floor space is expected to be reused (BEST 1994). The remaining building floor space would be demolished.

Stationary Sources

The magnitude of the ambient air quality impacts from stationary sources resulting from the implementation of Alternative Reuse Scenario 3 would depend upon the type and size of industries which would relocate to the property, primarily in the Marine Industrial Park proposed for the south part of the Base in Concepts 3 and 3A. Since no data are available on the number, type, and size of stationary air contaminant sources expected to be located at the site, it is not possible to quantitatively assess the air quality impacts of the preferred plan with an acceptable degree of error. However, any industries with air pollution sources relocating to the Marine Industrial Park will be required to obtain the approval of the South Carolina Department of Health and Environmental Control (SCDHEC) in the form of a permit to construct, a permit to operate, or an exemption from the permitting process. Permits are not issued and potential sources cannot be constructed or operated if air quality impacts are above regulatory limits.

Mobile Sources

Ambient air quality in the vicinity of the base would be impacted by exhaust emissions from motor vehicle traffic associated with businesses within the facility. Title I of the Clean Air Act of 1990 does not prescribe any special control measures for mobile sources in areas where air quality is in attainment with NAAQS, such as in the Charleston Air Quality Control Region.

An estimate of POV emissions was determined based on the EPA mobile source emission factor model MOBILE 5.0a (EPA 1993). The emission factor generated by the model is based on the types and age of vehicles comprising the fleet of POVs, average speed, and other factors. Many of the parameters in the model were assigned default values since

Table 4-6

**ESTIMATED POV ANNUAL VEHICLE MILES TRAVELED (VMT) FOR ROUND-TRIP
COMMUTE TO THE PROJECT AREA
(DEVELOPMENT CONCEPT 3 - YEAR 2015)**

Place of Residence	Distance to Project Area (Miles)	Percent Total POVs	24-Hour Two-Way Volume (Weekdays)	24-Hour Two-way Volume (Weekends)	Daily Miles Traveled (Weekdays)	Daily Miles Traveled (Weekends)	Annual Miles Traveled (Weekdays)	Annual Miles Traveled (Weekends)	Annual Miles Traveled (Total)
Goose Creek/Summerville	16	39.7	23,394	3,057	187,155	24,452	46,788,832	2,811,983	49,600,815
North Charleston	6	24	14,143	1,848	42,428	5,543	10,607,040	637,477	11,244,517
St. Andrews	8	11.7	6,895	901	27,578	3,603	6,894,576	414,360	7,308,936
Charleston	4	2.3	1,355	177	2,711	354	677,672	40,728	718,400
James Island	12	4.7	2,770	362	16,618	2,171	4,154,424	249,679	4,404,103
Downtown	4	0.8	471	62	943	123	235,712	14,166	249,878
Mount Pleasant	12	4.3	2,534	331	15,203	1,986	3,800,856	228,429	4,029,285
Project Area	2	12.3	7,248	947	7,248	947	1,812,036	108,902	1,920,938
Total		100	58,810	7,684	299,885	39,180	74,971,148	4,505,724	79,476,872

Key:

POV = Personally owned vehicle

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site-specific data are not available. Default values are contained within the model and are based on nationwide vehicle statistics. Emission factors and estimates of vehicle miles travelled (VMT) were used to estimate the tons per year of pollutant emitted from POVs. VMT estimates are based on an average commuting distance and average daily traffic estimates (BEST 1994).

At full implementation of Development Concept 3 (year 2015), 15,925 workers would be employed. The average daily traffic (ADT) generated by Concept 3 for a weekday would be 67,259 vehicular trips. The ADT for a weekend would be 18,469 vehicular trips, including 8,331 daily truck trips. Estimated annual VMT for POVs are presented in Table 4-6. Estimated annual traffic-generated emissions for the Preferred Development Plan at full build-out are summarized in Table 4-7.

Table 4-7 ESTIMATED ANNUAL EMISSIONS FROM TRAFFIC (DEVELOPMENT CONCEPT 3 - YEAR 2015)				
Vehicle Type	Estimated Annual Vehicle-Miles Traveled	Estimated Annual Emissions (Tons per Year)		
		VOC	NO _x	CO
POVs	79,476,872	218.19	145.46	1,909.37
LDGT and LDGV	682,185	2.60	1.51	22.97
HDDV	8,675,685	24.10	144.44	117.08
Total		244.90	291.41	2,049.42

Key:

CO = Carbon Monoxide.
HDDV = Heavy Duty Diesel Vehicles.
LDGT = Light Duty Gasoline Trucks.
LDGV = Light Duty Gasoline Vehicles.
NO_x = Oxides of Nitrogen.
VOC = Volatile Organic Compound.

Mobile source impacts would be lessened with road and rail improvements that are proposed as part of Concept 3. Plans for these improvements are discussed in Section 4.8 of this EIS. The road improvements may lessen CO hot-spot impacts (localized high CO concentration areas due to traffic congestion); however annual emissions would not be significantly altered because these improvements are not likely to reduce annual VMT. The

total annual estimated emissions due to Concept 3 in 2015, as shown in Table 4-7, are similar to the estimated annual emissions for current (1994) conditions (see Table 3-6).

Additional mobile source emissions would be generated by the activities associated with the proposed Marine Cargo Terminal. Emissions would be generated by ship activity, railroad activity, and truck traffic at the ship pier and Intermodal Rail Yard. Emission quantities are based on projected cargo volumes outlined in the Charleston Naval Complex Reuse Plan (BEST 1994) and on standard emission factors for marine vessels, locomotives, and heavy duty diesel vehicles. Emissions are estimated in terms of annual tons of pollutant emitted into the Charleston Air Quality Control Region.

Marine vessel activities consist of container ship, bulk ship, and auto carrier traffic. Total number of marine vessels calling on various terminals in the Port of Charleston for the year 1993 was 1,986, which corresponds to 804,373 TEUs (20 foot equivalent units) or 405 TEUs per vessel of containerized cargo (BEST 1994). However, current container facilities are completely utilized. Container volume requirements in the Port of Charleston are expected to double by the year 2015 (BEST 1994). A capacity shortfall of 1,220,931 TEUs is projected for the Port of Charleston in the year 2015, which corresponds to approximately 3,014 vessels (assuming 405 TEUs per vessel). This shortfall in capacity is proposed to be eliminated by the development of an eight-ship berth for container cargo as part of Development Concept 3. In addition, Concept 3 indicates a need for one automotive terminal and one combined neo and break-bulk terminal, providing for four additional ship berths.

To estimate emissions from the ship activity for this alternative, expected cargo volumes and average vessel capacity were used to estimate the number of ship berthings per year. Based on information provided by the American Bureau of Shipping, Charleston, an average marine vessel uses approximately 500 gallons of fuel for the activities within the Port of Charleston. The projected ship berthing and emission factors for marine vessels were then used to estimate the annual emissions shown in Table 4-8 (EPA 1991). The shortfall of cargo capacity is not anticipated to begin until the year 2005, and not reach a doubling of existing capacity until the year 2015; thus the projected emissions would not impact the air basin until well into the next century. Emissions estimates for future container ships account for promulgation or new emissions standards for these vessels. These standards will be phased in over several years.

The development of the Intermodal Rail Yard is also proposed as part of Concept 3. This rail yard would provide transportation of container, bulk, and automotive shipments to and from the Cargo Terminal and Marine Industrial Park. The primary emission source for this aspect of the Cargo Terminal operation are railroad locomotives. Projections of rail

<p align="center">Table 4-8</p> <p align="center">ESTIMATED EXHAUST EMISSION FROM MARINE VESSELS FOR DEVELOPMENT CONCEPT 3 - YEAR 2015</p>			
Pollutant	Emission Factor (lb/10³ gallon)	Annual Number of Ships	Annual Emissions (tons/year)
SO ₂	27	3,014	20.3
CO	110	3,014	82.9
VOC	50	3,014	37.7
NO _x	270	3,014	203.4

Key:

CO =Carbon monoxide.
NO_x =Nitrogen oxides.
SO₂ =Sulfur dioxide.
VOC =Volatile organic compound.

traffic (BEST 1994) were used along with rail yard locomotive emission factors (EPA 1992) and emission reduction information (EPA 1993) to estimate the annual emissions. These are shown in Table 4-9.

Truck traffic would be an integral part of the Cargo Terminal, the Intermodal Rail Yard and the Marine Industrial Park. Cargo volumes projected for truck transportation (BEST 1994) were used along with heavy duty diesel vehicle emission factors (EPA 1991) to estimate annual emissions. These emission estimates are included in the traffic source emission results (see Table 4-7).

Table 4-10 shows a summary of the estimated emissions for all mobile sources associated with Development Concept 3.

Construction and Demolition

Air contaminant emissions from vehicles and machinery will be generated during construction and building demolition activities associated with implementation of Development Concept 3. Fugitive dust emissions may be generated by activities associated with demolishing buildings and pavement, clearing land, using construction vehicles on unpaved land areas, and transporting soil by trucks. Uncontrolled fugitive dust emissions from demolition activities is estimated using an emission rate of 1.2 tons of particulate per acre of disturbed area per month of activity (EPA 1985). During the five-year period of demolition activities, 1,474,398 square feet of existing building space on about 34 acres will be demolished (BEST

<p align="center">Table 4-9</p> <p align="center">ESTIMATED EXHAUST EMISSIONS FROM LOCOMOTIVES FOR PROPOSED INTERMODAL RAILYARD</p>							
	Number of Yard Locomotives ^b		Pollutant				
			NO _x	CO	VOC	SO ₂	PM
Locomotives manufactured before calendar year 2005	12	Emission factor ^a (tons/year)	15.8	3.7	2.1	1.5	0.67
		Annual emissions (tons/year)	189.6	44.4	25.2	18.0	6.8
Locomotives manufactured after calendar year 2005	12	Emission factor (tons/year)	11.7	3.7	2.1	1.5	0.57
		Annual emissions (tons/year)	140.4	44.4	25.2	18.0	6.8
		Total Annual Emissions (tons/year)	330.0	88.8	50.4	36.0	13.7

^a Emission factors based on national average for yard locomotives (EPA 1992). Emission factor for NO_x based on annual NO_x reductions from anticipated locomotive standards (EPA 1995).

^b Number of locomotives based on projection (two locomotives per train, two trains per day, and six days per week) (USM 1994). 50% locomotives are assumed to be manufactured before calendar year 2005 and 50% after calendar year 2005.

Key:

CO = Carbon monoxide.
 NO_x = Nitrogen oxides.
 PM = Particulate matter.
 SO₂ = Sulfur dioxide.
 VOC = Volatile organic compounds.

<p align="center">Table 4-10</p> <p align="center">ESTIMATED ANNUAL EMISSIONS FROM MOBILE SOURCES FOR DEVELOPMENT CONCEPT 3</p>					
	Estimated Annual Emissions (tpy)				
	NO _x	SO ₂	CO	PM	VOC
Mobile Sources					
Vehicles	291.4	NA	2,049	NA	244.9
Locomotives	330	36.0	88.8	13.7	50.4
Marine Vessels	203.4	20.3	82.9	NA	37.7
Total	824.8	56.3	2,220.7	13.7	330.0

Key:

CO = Carbon monoxide.
NO_x = Nitrogen oxides.
PM = Particulate matter.
SO₂ = Sulfur dioxide.
tpy = Tons per year.
VOC = Volatile organic compounds.

1994). Assuming the disturbed area will be 1.5 times the area footprint of the buildings, a maximum of 10 acres per year will be disturbed. This results in 48.96 tons per year of fugitive dust emissions.

Vehicular exhaust and crankcase emissions from gasoline and diesel engines would comply with applicable EPA mobile emission regulations (40 CFR Part 85) and would result in only minor, short-term reduction in local air quality. Detailed construction information is not sufficiently available to allow estimates of quantity and type of construction equipment required and subsequent emissions.

4.6.1.1 Alternative Reuse Scenario 3: Development Concept 3A

Development Concept 3A includes similar functional elements as Concept 3, and would generate similar levels of employment, vehicular traffic, rail traffic, and shipping traffic. As such, it is assumed that stationary and mobile air emissions (i.e., NO_x, SO₂, CO, PM, and VOC) would be similar to those calculated for Concept 3. Cumulative impacts and mitigation measures would be similar as well.

4.6.1.2 Alternative Reuse Scenario 3: Development Concept 3B

Development Concept 3B also would impact ambient air quality in two ways. Short-term impacts would occur as a result of emissions from demolition and construction activities associated with facility reconfiguration. Long-term impacts would occur due to emissions from stationary and mobile sources associated with the operation of the facility.

Stationary Emission Sources

Quantifying emissions for Concept 3B is not entirely feasible because the plan lacks detail on the level of future industrial activity and the specific characteristics of facilities that will ultimately be developed. However, emission levels can be approximated using data from similar shipyard facilities in the U.S.

Table 4-11 contains actual annual air emissions data from five existing shipbuilding/repair facilities of various sizes on the eastern seaboard, including those at the Charleston Naval Shipyard. Since Concept 3B includes retaining all existing shipyard/industrial capacity, it is assumed that the emissions from the existing facilities represent the lower bound for Concept 3B. The Norfolk Shipyard and Newport News Shipbuilding Co. have the largest quantities of air emissions and will, therefore, be assumed to be representative of the upper bound for Concept 3B. The latter assumption is considered conservative since the Norfolk Shipyard and Newport News Shipbuilding Co. are much larger facilities.

The Charleston shipyard is known to have the following stationary source types (see Table 4-12):

- Fuel burning equipment consisting of boilers and furnaces;
- Stationary internal combustion engines including diesel/gasoline engines and standby generators;
- Surface coating operations including open spray painting activities in dry docks and those enclosed in paint spray booths;
- Solvent use operations including degreasing, cleaning tanks, coating tanks, and paint stripping;
- Abrasive blasting operations;
- Electroplating;
- Metalworking/welding; and
- Woodworking.

Table 4-11

ANNUAL ACTUAL AIR EMISSIONS FROM REPRESENTATIVE SHIPBUILDING/REPAIR FACILITIES

Facility	Activities	Total Rated Boiler Capacity and Type of Fuel	Actual Emissions, tpy				
			NOx	SO2	CO	PM	VOC
General Dynamics, Groton, Connecticut	Fuel Burning Equipment	164.9 MMBtu/hr fuel oil #2	69.1	216.2	6.9	14.5	4.3
	Other Activities ^a		NA	NA	NA	1.6	32.4
	Total		69.1	216.2	6.9	16.1	36.7
Bath Iron Works Bath, Maine ^b	Fuel Burning Equipment	194.1 MMBTU/hr fuel oil #6	57.3	300	5.2	18.3	0.3
	Other Activities ^a		NA	NA	NA	NA	88.3
	Total		57.2	300	5.2	18.3	88.6
Norfolk Shipyard Portsmouth, Virginia	Fuel Burning Equipment	1,649 MMBtu/hr, including use of natural gas, fuel oil 2 coal, refuse fuel	845	708	964	64	121
	Other Activities ^a		NA	NA	NA	13	96
	Total		845	708	964	77	217
Newport News Shipbuilding Co. Virginia	Fuel Burning Equipment	149.6 MMBtu/hr., including use of natural gas, fuel oil #2	371.6	1,803.8	28.2	136.6	4.5
	Other Activities ^a		0.2	0.3	NA	59.5	403.6
	Total		371.8	1,804.1	28.2	196.1	408.1
Charleston Naval Shipyard, Charleston, South Carolina	Fuel Burning Equipment	516.6 MMBtu/hr fuel oil #2	110.1	260.2	42.5	14.1	1.2
	Other Activities ^a		24.3	0.8	6.6	91.8	113.2
	Total		134.4	261.0	49.1	105.9	114.4

Table 4-11 (Cont.)

- ^a Other activities include surface coating, solvent use, foundries, abrasive blasting, welding, and woodworking.
^b Actual emissions were calculated based on potential annual emissions and actual fuel usage

Sources: State of Maine Department of Environmental Protection
Commonwealth of Virginia Department of Environmental Quality
Environmental Science & Engineering, Inc.

<p align="center">Table 4-12</p> <p align="center">ESTIMATED ANNUAL EMISSIONS FOR EXISTING CHARLESTON NAVAL SHIPYARD</p>						
Operations	Actual Emissions (tpy)					
	NOx	SO2	CO	PM	VOC	HAP
Fuel burning	110.1	260.2	42.5	14.1	1.2	NE
Stationary internal combustion	24.3	0.8	6.6	2.2	1.3	NE
Surface coating	NA	NA	NA	40.4	97.0	40.2
Storage tanks and fueling	NA	NA	NA	NA	5.7	NE
Solvent use	NA	NA	NA	NA	9.2	2.7
Abrasive blasting	NA	NA	NA	26.1	NA	NA
Electroplating	NA	NA	NA	<0.1	NA	NE
Welding	NA	NA	NA	1.0	NA	NE
Woodworking	NA	NA	NA	22.1	NA	NA
Total	134.4	261.0	49.1	105.9	114.4	42.9

Key:

NOx = Nitrogen Oxides.
 CO = Carbon Monoxide.
 SO2 = Sulfur Dioxide.
 PM = Particulate Matter.
 VOC = Volatile Organic Compound.
 HAP = Hazardous Air Pollutants.
 NA = Not applicable.
 NE = Negligible.
 tpy = tons per year.

Source: Environmental Science & Engineering, Inc. 1992.

The four additional shipyards evaluated also have these same stationary source types.

The nature of the emissions is not expected to change with the implementation of Concept 3B. Only the quantity of emissions will change within the range specified above.

Mobile Sources

Ambient air quality in the vicinity of the Base would be impacted by exhaust emissions from motor vehicle traffic associated with businesses within the facility. Title I of the Clean Air Act (CAA) of 1990 does not prescribe any special control measures for mobile sources in areas where air quality is in attainment with National Ambient Air Quality Standards (NAAQS), such as in the Charleston Air Quality Control Region.

Table 4-13

**ESTIMATED POV ANNUAL VEHICLE MILES TRAVELED (VMT) FOR ROUND-TRIP
COMMUTE TO THE PROJECT AREA
(DEVELOPMENT CONCEPT 3B)**

Place of Residence	Distance to Project Area (Miles)	Percent Total POVs	24-Hour Two-Way Volume (Weekdays)	24-Hour Two-way Volume (Weekends)	Daily Miles Traveled (Weekdays)	Daily Miles Traveled (Weekends)	Annual Miles Traveled (Weekdays)	Annual Miles Traveled (Weekends)	Annual Miles Traveled (Total)
Goose Creek/Summerville	16	39.7	20,979	6,257	167,979	50,054	41,994,660	5,156,182	47,750,842
North Charleston	6	24	12,694	3,782	38,081	11,347	9,520,200	1,304,928	10,825,128
St. Andrews	8	11.7	6,188	1,844	24,753	7,376	6,188,130	848,203	70,036,333
Charleston	4	2.3	1,216	362	2,433	725	608,235	83,370	691,605
James Island	12	4.7	2,486	741	14,915	4,444	3,728,745	511,097	4,239,842
Downtown	4	0.8	423	126	846	252	211,560	28,998	240,558
Mount Pleasant	12	4.3	2,274	678	13,646	4,066	3,411,405	467,599	3,879,004
Project Area	2	12.3	6,505	1,938	6,505	1,938	1,626,368	222,925	1,849,293
Total		100	52,890	15,760	269,157	80,203	67,289,303	9,223,304	76,512,606

Key:

POV = Personally owned vehicle.

Mobile sources associated with Concept 3B consist of personally owned vehicles (POVs) used for commuting to and from the site, vehicles used for maintenance and site operations, light trucks and oversized vans, and heavy trucks. Exhaust and crankcase emissions from these vehicles include carbon monoxide (CO), particulate matter (PM), nitrogen oxide (NO_x), and volatile organic compounds (VOCs).

The average daily traffic (ADT) that would be generated by Concept 3B for a weekday would be 52890 POVs, 6,130 heavy trucks, and 1,082 light trucks; for a weekend, ADT would be 15760 POVs, 858 heavy trucks, and 152 light trucks (see Section 4.8).

Vehicle miles traveled (VMT) are based on average commuting distance and average daily traffic estimates (see Table 4-13). Because no current data is available regarding on-site truck trip distribution, it was assumed that trucks each travel approximately three miles daily on site.

An estimate of POV emissions was based on the EPA mobile source emission factor model MOBILE5A (EPA 1993). The emission factors generated were derived from previous analyses conducted for Concept 3A and are presented in Table 4-14. Emission factors and VMT estimates were used to calculate the annual emissions from vehicles. Estimated annual emissions from mobile sources are presented in Table 4-15.

Table 4-14 AIR POLLUTANT EMISSION FACTORS USED FOR LDGVs, LDGTs, HDDVs		
Vehicle Type	Pollutant	Average Emission Factor (g/mile)
Light Duty Gasoline Vehicles (LDGV)	VOC	2.49
	NO _x	1.66
	CO	21.79
Light Duty Gasoline Trucks (LDGT)	VOC	3.46
	NO _x	2.01
	CO	30.54
Heavy Duty Diesel Vehi- cles (HDDV)	VOC	2.52
	NO _x	15.10
	CO	12.24

Source: U.S. Department of the Navy 1994.

Summarized annual air emissions from stationary and mobile sources for Development Concept 3B are shown in Table 4-16.

Table 4-15				
ESTIMATED ANNUAL EMISSIONS FOR DEVELOPMENT CONCEPT 3B GENERATED TRAFFIC				
Vehicle Type	Estimated Annual Vehicle-Miles Traveled	Estimated Annual Emissions (tpy)		
		VOC	NO _x	CO
POVs	76,512,606	210.1	140.0	1,838.2
LDGT and LDGV	863,940	3.3	1.9	29.1
HDDV	4,893,510	13.6	81.5	66.0
Total		226.9	223.4	1,933.3

Key:

CO = Carbon Monoxide.
HDDV = Heavy Duty Diesel Vehicles.
LDGT = Light Duty Gasoline Trucks.
LDGV = Light Duty Gasoline Vehicles.
NO_x = Oxides of Nitrogen.
VOC = Volatile Organic Compound.

Construction and Demolition

Air contaminant emissions from vehicles and machinery will be generated during construction and building demolition activities associated with implementation of Concept 3B. Fugitive dust emissions may be generated by activities associated with demolishing buildings and pavement, clearing land, mechanical disturbance of unpaved areas, and transporting of soil.

Vehicular exhaust and crankcase emissions from gasoline and diesel engines would comply with applicable EPA mobile emission regulations (40 CFR Part 85) and would result in only minor, short-term reduction in local air quality. Detailed construction information is insufficient to allow estimates of quantity and type of construction equipment required and subsequent emissions.

4.6.2 Alternative Reuse Scenario 1

Reuse Scenario 1 maximizes the use of the base's existing assets of land and facilities and reuse of existing buildings, roads, and utility facilities. No major site or building renovations are proposed. Of 6,026,710 square feet (SF) of building assets, 3,376,000 SF or

Table 4-16
ESTIMATED ANNUAL AIR EMISSIONS FOR DEVELOPMENT CONCEPT 3B

	Estimated Annual Emissions (tpy)									
	NO _x		SO ₂		CO		PM		VOC	
	Lower bound	Upper bound	Lower bound	Upper bound	Lower bound	Upper bound	Lower bound	Upper bound	Lower bound	Upper bound
Stationary Sources	134	845	261	1,804	49	964	77	196	114	408
Mobile Sources	223	223	NA	NA	1,933	1,933	NA	NA	227	227
Total	357	1,068	261	1,804	1,982	2,897	77	196	341	635

Note: Stationary sources lower bound annual emissions represent Charleston Naval Shipyard. Upper bound annual emissions represent maximum emissions from Norfolk Shipyard or Newport News Shipbuilding Co.

56% would be utilized. Maximum employment would be 9,887 or 43% of the preclosure level.

Although no detailed information is available on stationary sources it was assumed that air emissions from fuel burning and power generating equipment would be proportional to the buildings assets utilized, or 46% of the preclosure level. Emissions from mobile sources can be assumed to be 67% of the preclosure level which coincides with the 33% reduction in employment. Based on these assumptions estimated minimum annual emissions for Reuse Scenario 1 were projected (see Table 4-17).

<p align="center">Table 4-17</p> <p align="center">ESTIMATED MINIMUM ANNUAL EMISSIONS</p> <p align="center">FOR REUSE SCENARIO 1</p>					
	Estimated Annual Emissions (tpy)				
	NO _x	SO ₂	CO	PM	VOC
Stationary Sources	80.2	135.8	28.5	9.7	1.5
Mobile Sources	91.6	NA	951.2	NA	110.1
Total	171.8	155.8	979.7	9.7	111.6

Key:

CO = Carbon monoxide.
 NA = Not applicable.
 NO_x = Nitrogen oxides.
 PM = Particulate matter.
 SO₂ = Sulfur dioxide.
 tpy = Tons per year.
 VOC = Volatile organic compounds.

4.6.3 Alternative Reuse Scenario 2

Reuse Scenario 2 proposes creation of a mixed use, urban waterfront district encompassing a visitor center, large waterfront park, and exhibition space. Of 6,026,710 SF of building assets, 3,942,000 SF or 65% would be utilized. Maximum employment will be 11,352 or 49% of existing.

Although no detailed information is available on stationary sources, it was assumed that air emissions from fuel burning and power generating equipment would be proportional to the building assets utilized or 65% of the preclosure level. Emissions from mobile sources can be assumed 49% of the preclosure level. Based on these assumptions, estimated minimum annual emissions for Reuse Scenario 2 were projected (see Table 4-18).

Table 4-19 presents an air pollution emission summary for existing conditions and alternative reuse plans.

<p align="center">Table 4-18</p> <p align="center">ESTIMATED MINIMUM ANNUAL EMISSIONS FOR REUSE SCENARIO 2</p>					
	Estimated Annual Emissions (tpy)				
	NO _x	SO ₂	CO	PM	VOC
Stationary Sources	93.1	180.8	33.1	11.3	1.7
Mobile Sources	104.4	NA	1,083.7	NA	125.4
Total	197.5	180.8	1,117.0	11.3	127.1

Key:

CO = Carbon monoxide.
 NA = Not applicable.
 NO_x = Nitrogen oxides.
 PM = Particulate matter.
 SO₂ = Sulfur dioxide
 tpy = Tons per year.
 VOC = Volatile organic compounds.

4.6.4 Cumulative Impacts

The closure of the Naval Base will have a positive impact on regional air quality. Full development of the proposed industrial facilities is expected to be phased over a 20-year period and emission increases are expected to occur incrementally during this period. An action that could have a cumulative impact on ambient air quality with regard to Alternative Development Scenario 3 is the construction of the new road and rail improvements including McMillan Avenue, Cosgrove Avenue, Virginia Avenue, a new access from a redesigned Spruill Avenue interchange to Route I-26, and the closure of the CSX Intermodal Rail Yard in North Charleston. For example, the increased NO_x emissions from the increased rail activity at the Base will be offset regionally by the closing of the existing CSX rail yard and the improved rail access to the site.

Table 4-19					
AIR POLLUTANT EMISSION SUMMARY					
	NO _x	SO _x	CO	PM	VOC
Existing Condition					
Stationary	143	278	51	112	134
Mobile	247	16	2,224	2	257
Total	390	294	2,275	114	391
Alternative Reuse Scenario 1					
Stationary	80	136	29	10	2
Mobile	92	NA	951	NA	110
Total	172	136	980	10	112
Alternative Reuse Scenario 2					
Stationary	93	181	33	11	2
Mobile	104	NA	1,084	NA	125
Total	197	181	1,117	11	127
Alternative Reuse Scenario 3 (Development Concept 3^a)					
Stationary	NA	NA	NA	NA	NA
Mobile	825	56	2,221	14	330
Total (minimum)	825	56	2,221	14	330

Note: Total emissions for Preferred Development Plan represent the minimum potential emissions equal to mobile source emissions because data on stationary source emissions is not available.

^a Emission impacts for Concept 3A are similar to Concept 3. Impacts for Concept 3B are summarized in Table 4-15.

4.6.5 Mitigation Measures

Abatement strategies to mitigate air pollutant impacts can be implemented during the demolition/construction and operational phases of Alternative Reuse Scenario 3. The South Carolina Air Pollution Regulation No.62.6 "Control of Fugitive Particulate Matter" requires necessary precautions be taken to prevent particulate matter from becoming airborne. These mitigative measures include use of water or chemicals for control of dust in demolition or construction operations, the grading of roads or clearing of land, the imposition of strict slow speed limits for vehicular traffic on construction/demolition sites, and the proper loading of trucks, trailers, etc., to prevent spillage on paved roadways. Use of these mitigative measures during construction will ensure that only minor, temporary increases in airborne particulate matter levels will occur.

Emissions from construction vehicles/equipment could be mitigated by efficient scheduling of vehicles/equipment use, regular vehicle engines maintenance, and use of low-sulfur-content diesel fuel.

Regulations and guidance in conducting open burning are described by South Carolina Regulation No. 62.2: "Prohibition of Open Burning". Open burning is generally prohibited, however it can be employed under specific conditions. Because these state regulations and guidelines adequately control open burning, any emissions generated would be minor and temporary.

Air emissions following construction will be mitigated by SCDHEC via the issuance of air operating permits to appropriate applicants (i.e., Redevelopment Authority, SCSA, other private developer).

4.7 Noise Impacts

Implementation of any of the proposed alternative reuse plans would initially result in a decrease in ambient noise levels as the majority of the activities and processes which are noise sources cease to operate. It is not possible to quantitatively predict future ambient sound levels resulting from any of the alternatives without noise level measurements. The following sections provide a qualitative discussion of the potential noise impacts resulting from the proposed alternative scenarios.

4.7.1 Alternative Reuse Scenario 3: Development Concept 3

The implementation of Development Concept 3 would impact the ambient sound levels in the surrounding area. The central feature of this alternative is the proposed major

Cargo Terminal, a Class A Industrial Park and an Intermodal Rail Yard. Development of this complex would include direct links to I-26 as well as new rail connections to the mainline of the CSX and Norfolk and Southern rail lines. Noise levels normally associated with an active shipyard would be from machinery loading and unloading the ships, truck traffic to and from the piers, and the ships themselves. Potentially increasing the capacity of the shipyard also may result in an increase in ambient noise levels in the immediate vicinity of the shipyard. The nearest noise sensitive areas are the residential areas nearest to the shipyard. Construction and operation of the I-26 and the rail connections will result in increased noise levels in the residential areas to be traversed.

The sound exposure level (SEL) is the integration of the A-weighted sound level over the period of a single event (such as a train passing). Both the frequency and duration of the noise are considered in the SEL. It has been estimated that railroad traffic will consist of approximately 12 trains per week, six days per week for an average of two trains per day. Therefore, each of the trains passing on the tracks can be considered as a single event. The variation of SEL with distance for trains is charted in the document *Planning in the Noise Environment* (DoD 1978). The anticipated SELs resulting from each train passing are shown for various distances from the railroad centerline are presented in Table 4-20. In order to compare the SELs to relevant community noise guidelines a DNL has to be calculated from the SEL. DNL from an intermittent noise source is calculated as follows:

$$DNL = SEL + 10 \log (N_d + 10 N_n) - 49.4$$

where:

SEL = Maximum SEL occurring during a single event.

N_d = Number of individual events occurring during the daytime (7 a.m. to 10 p.m.).

N_n = Number of individual event occurring during the nighttime (10 p.m. to 7 a.m.).

Table 4-20 also shows the DNL corresponding with each SEL. These values are depicted graphically as noise contours on Figure 4-4. From the equation above, the SEL which equates to a DNL of 55 dB(A) can be calculated and the distance that this contour occurs from the railroad centerline can be taken from the chart in *Planning and the Noise Environment*. Using this method, it is estimated that the 55 dB(A) contour will occur at approximately 140 feet from the railroad centerline.

<p style="text-align: center;">Table 4-20</p> <p style="text-align: center;">SELs AND DNLs NEAR RAILROAD CENTERLINE</p> <p style="text-align: center;">(dB[A])^a</p>		
Distance from Railroad (feet)	SEL^b	DNL
100	103	57
140	101	55
200	99	53
300	96	50

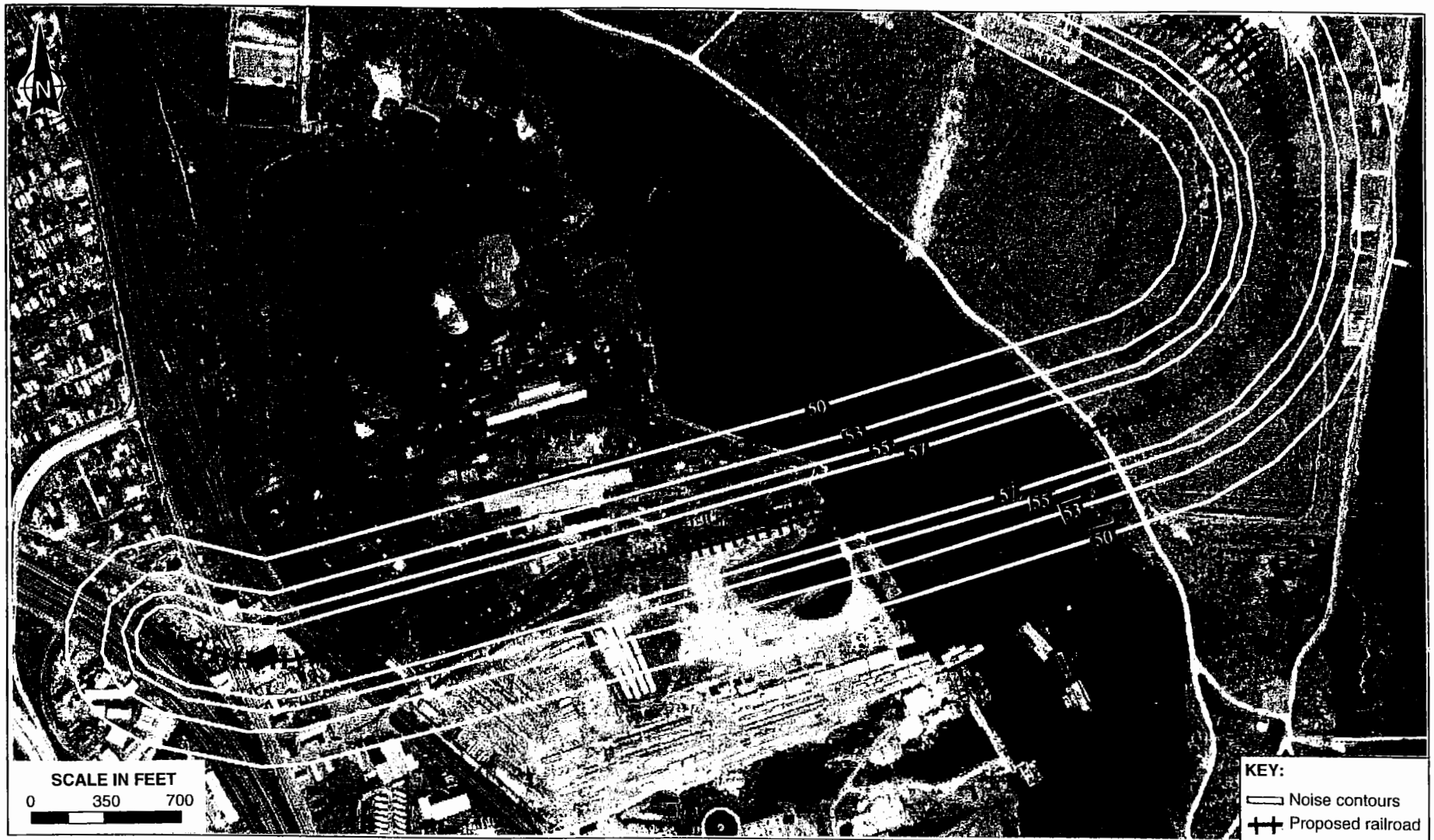
^a Assumptions: (1) cargo train traveling at 10 mph; (2) two trains per day; (3) no nighttime operations.

^b From Table 3-7.2.1 of *Planning in the Noise Environment* (Departments of Air Force, Army, and Navy 1978).

The Federal Interagency Committee on Urban Noise has published the *Guidelines for Considering Noise in Land Use Planning and Control*. This document classifies areas by noise zones A (0 to 55 dB), B (55 to 65 dB), C-1 (65 to 70 dB), C-2 (70 to 75 dB), D-1 (75 to 80), D-2 (80 to 85 dB), and D-3 (85+ dB) for the purpose of land use planning. Based upon these classifications, the area inside of 140 feet from the railroad centerline would be classified as a noise zone B based upon railroad noise only. The area outside of 140 feet from the railroad centerline would be classified as a noise zone A based upon railroad noise only. Noise zone A is considered to be compatible with all types of development. There is also a stipulation for other residential areas located in noise zones B that there be a 25 dB noise outdoor to indoor noise level reduction (NLR). The national average for NLR is 25 dB (EPA 1978).

As industries begin to relocate to the proposed Class A Industrial Park, ambient noise levels at and around the base would naturally begin to increase over post-closure levels. There are no state or federal regulations regarding environmental noise. It is not possible to quantitatively assess the ambient noise levels which will result from Development Concept 3 without noise measurement or some knowledge of the types and sizes of industries that will relocate to the base. However, since the land uses at the base will essentially remain the same, noise levels are not expected to deviate greatly from pre-closure levels.

Concept 3 also proposes road construction and the demolition of several buildings at the base. These construction/demolition activities would cause temporary increases in the ambient noise environment in the immediate vicinity of these activities. The specific impact of construction/demolition activities on noise sensitive areas would depend upon construction



SOURCE: Ecology and Environment, Inc. 1994

Figure 4-4 NOISE CONTOURS WITH ASSOCIATED NOISE LEVELS (dB[A])

methods, the equipment used, and the distance to the receptors. Noise emission levels for construction equipment typically used in road construction and building demolition are shown in Figure 4-5. Noise levels during construction/demolition may typically be expected to range from 68 to 95 dB(A), measured at 50 feet. Blasting, which may be required to demolish buildings, will emit high-intensity noise of a few seconds duration. The noise levels emitted during construction/demolition activities will exceed the levels that currently characterize the Base area. Figure 4-5 shows that dB(A) levels from construction equipment range from 70 dB(A) to over 100 dB(A), which will be a noticeable increase over existing conditions.

4.7.1.1 Alternative Reuse Scenario 3: Development Concept 3A

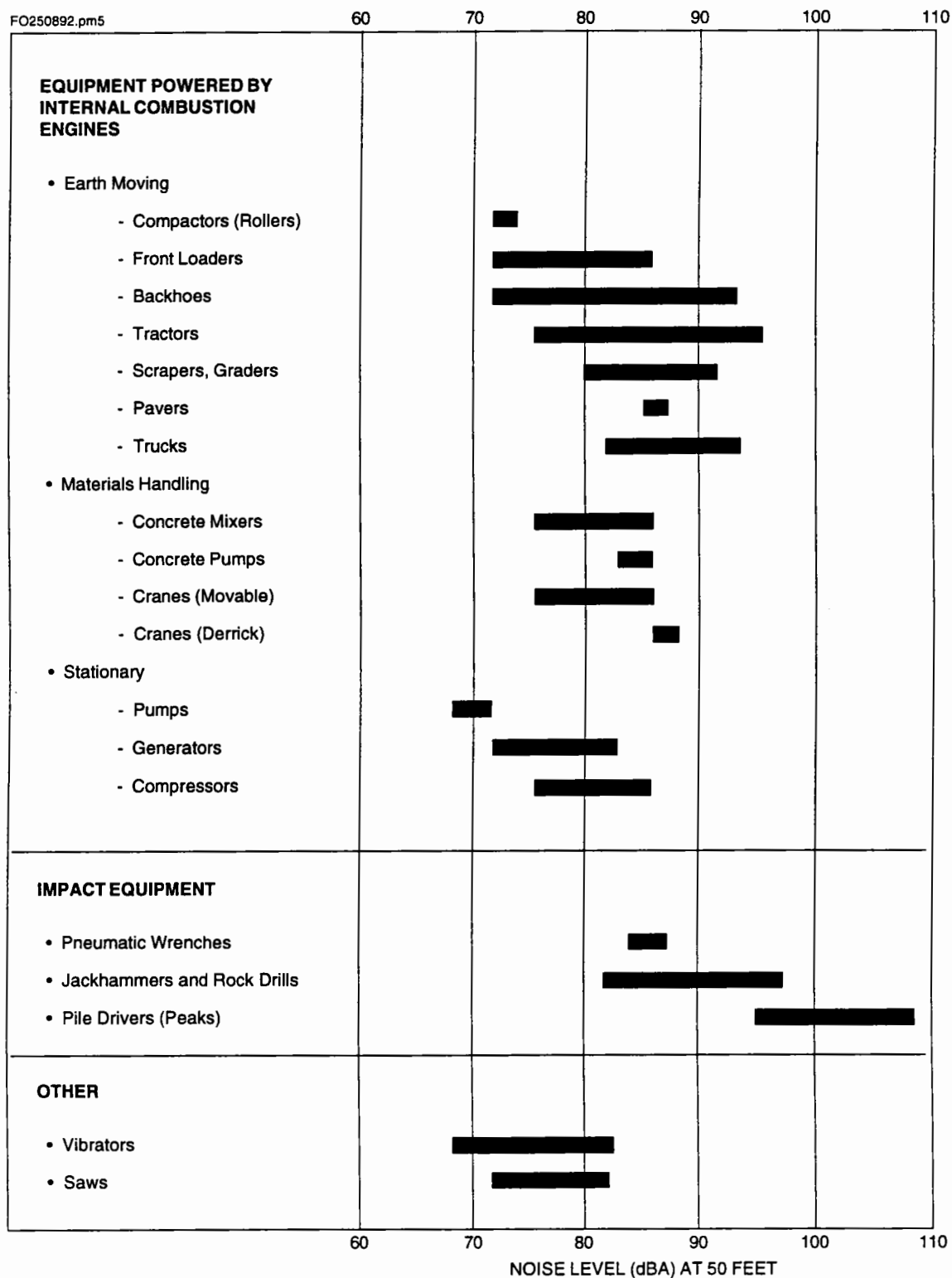
Development Concept 3A would generate similar noise levels as Concept 3; however, since the Intermodal Rail Yard would be located approximately 50 feet farther from nearby residential areas, noise levels off-base resulting from operation of the Cargo Terminal and Intermodal Rail Yard would be slightly less. Noise impacts resulting from the new road/rail access from the CSX lines and I-26 to the southern part of the Base would be the same as for Development Concept 3.

4.7.1.2 Alternative Reuse Scenario 3: Development Concept 3B

No significant noise impacts would result from Concept 3B. Noises resulting from the shipyard and maritime industrial activities would be similar to existing conditions. Short-term impacts would be expected from construction and demolition activities. Long-term impacts associated with increased truck and vehicle traffic generated from this alternative would be expected. Off-site noise impacts associated with the road/rail access proposed under Concepts 3 and 3A will not be realized with Concept 3B since it does not include these new road/rail facilities.

4.7.2 Alternative Reuse Scenario 1

This plan would result in minimal impacts to ambient sound levels since it proposes the smallest portion of reuse and does not call for construction of new facilities or demolition of existing facilities.



SOURCE: USEPA 1978.

NOTE: Based on limited available data samples

Figure 4-5 CONSTRUCTION EQUIPMENT NOISE RANGES

4.7.3 Alternative Reuse Scenario 2

This plan would not result in any obtrusive noise sources within the base. Noise sources associated with this alternative would be primarily vehicular traffic.

4.7.4 Cumulative Impacts

Cumulative noise impacts could potentially result from Alternative Reuse Scenario 3 at the peak of redevelopment. Increased capacity of the shipyard and nearby industrial operations could result in higher ambient noise levels. Depending upon the final alignment of the proposed road/rail corridors near industrial and commercial areas, this plan could result in increased noise levels which would be evident in residential areas.

4.7.5 Mitigative Measures

The impacts to ambient sound levels caused by construction and demolition activities can be mitigated by ensuring that such activities occur during daytime hours only (i.e., 7 a.m. to 7 p.m.) and adherence to noise ordinances or regulations as imposed by the City of North Charleston. Other measures which would be considered by the Redevelopment Authority include sound proofing of affected residences, noise barriers, earthen berms, vegetated barriers, or public notification of large noise events.

4.8 Transportation

4.8.1 Alternative Reuse Scenario 3: Development Concept 3

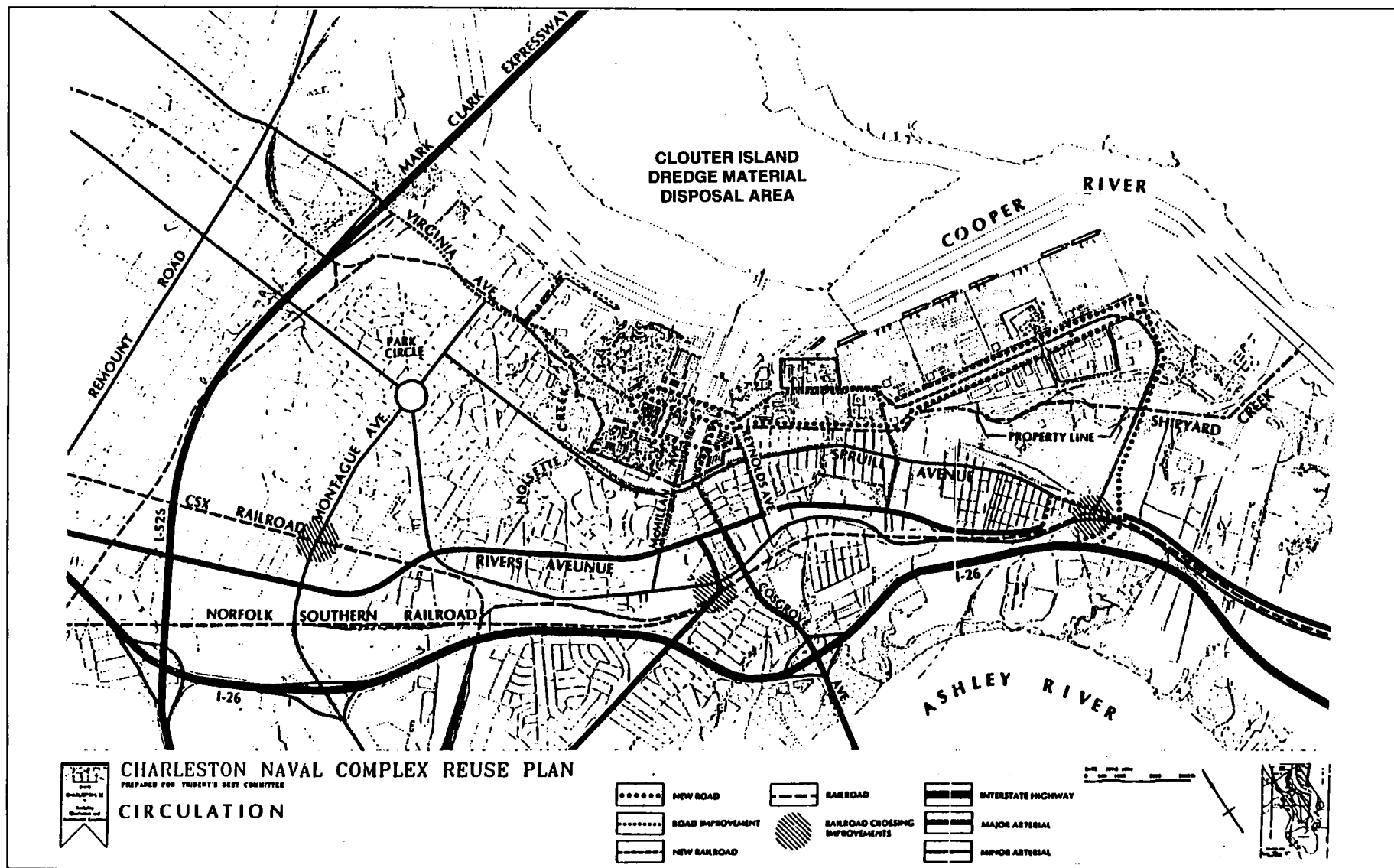
Circulation

A circulation plan as depicted by Development Concept 3 is illustrated in Figure 4-6.

Road Network

Significant changes to the existing roadway network proposed in Development Concept 3 include:

- Removal of surface streets from service that currently provide access to the southern portion of the base. This portion is designated to be developed as a Marine Cargo Terminal and Intermodal Rail Yard. Also included in this development is the construction of a new loop road providing vehicle access to the terminal and rail yard;



SOURCE: BEST 1994

Figure 4-6 DEVELOPMENT CONCEPT 3, CIRCULATION PLAN

- Realignment of the McMillan and Cosgrove Avenues into a promenade which would provide access to the northern portion of the base;
- Realignment of Virginia Avenue in order to provide two travel lanes in both directions; and
- Construction of a loop road that would encircle the office land use at the McMillan and Cosgrove Avenue promenade.

In addition, Concept 3 recommends a number of improvements for roadways near the Base including:

- Constructing a new interchange and access road to provide direct access to Interstate 26, near the existing Spruill Avenue interchange, from the maritime/industrial land uses;
- Widening Cosgrove Avenue between Azalea Drive and the promenade to provide three travel lanes in each direction;
- Widening Interstate 26 to provide four travel lanes in each direction between the Mark Clark Expressway (I-526) and the new interchange;
- Widening Virginia Avenue to provide two travel lanes in each direction between the Base and Remount Road;
- The proposed extension of Virginia Avenue south to Viaduct Road will provide a north south access corridor and connection points for the streets of the adjoining Chicora and Charleston Heights neighborhoods which currently dead-end at the existing fenceline. With the addition of better direct access points, vehicle patterns and development pressures may shift from previous key access corridors to be more evenly distributed throughout the surrounding area; and
- Implementing a yearly maintenance program for traffic signal systems at all major intersections along the Rivers and Spruill Avenue corridors.

Vehicular Trips

Development Concept 3 is expected to generate the following traffic volumes:

- Average daily traffic (ADT) for a weekday would be 67,259 vehicle trips. Of this traffic volume, 8,331 vehicle trips (approximately 12%) would be truck trips;
- Of the 8,331 truck vehicle trips, approximately 7,923 (approximately 95%) truck vehicle trips would occur in the maritime cargo and industrial areas (Note: average daily truck trips are expected to increase from about 3,060 currently to 8,331);

- ADT for a weekend would be 18,469 vehicle trips;
- The weekday PM peak hour traffic would be 8,126 vehicles, with 1,949 vehicles entering and 6,177 vehicles leaving;
- The weekend peak hour traffic would be 1,528 vehicles, with 616 vehicles entering and 912 vehicles exiting; and
- A weekday parking demand of 15,957 spaces and a weekend parking demand of 4,923 spaces.

These traffic volume estimates assume that the occupancy of all structures will be at 100% at the end of the 30-year development period. Although these traffic volumes are elevated above 1993 traffic volumes, they are only slightly elevated above 1990 AADT traffic volume of 58,550 trips per day for the base. Since the traffic increases would occur incrementally over the 30-year period, recommended improvements in the regional and local roadway network, especially the construction of a new interchange at I-26, would mitigate any incremental increases in vehicle traffic volume. In the short term, vehicle traffic volumes associated with the base are expected to decrease further as Navy activities are scaled back, and before redevelopment activities begin in earnest.

Marine Transportation

Development Concept 3 proposes to construct a new bulk/break bulk terminal north of the shipyard, and four container terminals along the southern portion of the base. Since the current use of the southern portion of the base is dedicated to providing docking for marine vessels, Development Concept 3 would not change the overall mission of providing docking access at the proposed terminal designed to accommodate eight ships simultaneously. Based on the current level of comparable marine traffic at other South Carolina State Port Authority ports of comparable size, the marine traffic from Concept 3 would not exceed the current marine traffic associated with the base. In addition, the Cooper River is currently used for both public and private shipping (see Section 4.8).

Rail Facilities

Significant changes to the existing railway network proposed in the Preferred Development Plan include:

- Abandonment of the existing rail facilities; and

- Construction of a new Intermodal Rail Yard to support the proposed Marine Cargo Terminal.

In addition, Concept 3 recommends a number of improvements for rail facilities near the base including:

- Constructing a new rail access bridge across Shipyard Creek that would provide a direct connection between the new Intermodal Rail Yard and the CSX and Norfolk Southern mainlines;
- Abandoning the existing CSX intermodal in North Charleston;
- Abandoning the existing CSX track running north-south on the east side of Spruill Avenue, adjacent to the base; and
- Elevating and/or reconfiguring selected intersections between roadways and rail facilities in North Charleston.

Rail traffic volumes are expected to increase over existing rail volumes due to the implementation of Development Concept 3. For estimating purposes, rail volumes were assumed to be about 12 trains per week (i.e., two trains per day, 6 days per week). These increased rail traffic volumes could adversely affect roadway traffic at-grade intersections. Intersection reconfiguring or roadway elevating would mitigate conflicts between increased rail and roadway traffic volumes. The phased development of Concept 3 would also allow ample time to reconfigure intersections prior to the construction of the new Intermodal Rail Yard.

Air Facilities

Air transportation facilities would not be impacted by the development proposed in Development Concept 3.

Mass Transportation

Development Concept 3 proposes continued operation of the internal shuttle van service with minor route variations to include service between commuter parking areas and employment areas. Concept 3 also recommends a study of the feasibility of developing a multimodal transit center near the base.

4.8.1.1 Alternative Reuse Scenario 3: Development Concept 3A

Traffic generation (including vehicular, marine, rail, and mass transit) associated with Development Concept 3A would be similar to those discussed for Development Concept 3. Improvements to the road network would also be as discussed above, except for minor modifications to the internal road and rail alignments due to the relocation of the Intermodal Rail Yard approximately 50 feet to the east.

4.8.1.2 Alternative Reuse Scenario 3: Development Concept 3B

Based on the road alignment included in the conceptual site plan, the existing on-base roadway network is proposed to remain substantially unchanged in Development Concept 3B. However, access by tractor trailer traffic to service the shipyard and industrial activities on base will require upgrading of on-base roadways to improve circulation and safety. For instance, roadways which are now used by smaller military supply vehicles would be redesigned or upgraded to accommodate larger turning radii (40 feet for commercial tractor trailers).

Vehicular Trips

Because Concept 3B proposes expanded shipyard and support facilities along Cooper River and the southern portion of the property, traffic volumes generated would vary from other alternatives examined. Since land uses in the northern and western portions of the Base under this scenario are generally identical to Concepts 3 and 3A, projected traffic generation estimates from these uses are assumed to be similar. However, areas proposed for the expanded shipyard and maritime industrial activities would generate different traffic volumes from the other scenarios.

The average daily traffic (ADT) for a weekday would be 60,102 vehicle trips, representing a 3% increase in traffic volume from the 58,550 average daily vehicle trips in 1990. Based on the assumption that 12% of the ADT would be truck traffic, 7,212 truck trips are projected. ADT for a weekend would be 16,774 vehicle trips, 1,010 of which would be truck traffic (assumed to be 6% of weekend ADT). Weekday afternoon peak hour volumes would equal 7,428 vehicles, while 1,404 weekend peak hour trips are projected. Table 4-21 displays ADT and trip generation factors for Concept 3B.

In light of these projected traffic volumes, other improvements may be deemed necessary over the course of implementing the scenario to improve circulation. Existing access roads may need to be improved to allow easier access to the industrial areas in the

<p align="center">Table 4-21</p> <p align="center">TRAFFIC PROJECTION DATA FOR CONTINGENT DEVELOPMENT CONCEPT 3B</p>				
Land Use: Employment:	Shipyard 2,816	Maritime Industrial 4,003	Other Land Uses ^a	Total Trips
Weekend ADT Multiplier ^b	.82	2.09	N/A	—
Weekday ADT	2,309	8,164	49,629	60,102
Weekend ADT Multiplier ^b	.51	.87	N/A	—
Weekend ADT	1,436	3,398	11,939	16,774
Weekday PM Peak Hour Multiplier ^b	.13 ^c	.40	N/A	—
Weekday PM Peak Hour Volume	366	1,562	5,599	7,428
Weekend Peak Hour Multiplier ^b	.04 ^c	.16	N/A	—
Weekend Peak Hour Volume	113	624	666	1,404

Notes:

- ^a Derived from the land uses under Concepts 3 and 3A which did not change in Concept 3B.
- ^b In vehicle trips per employee.
- ^c Multiplier generated by comparing the ratio of weekday to weekend trips in the light industrial category, then assigning a proportional amount of weekend trips to general industrial.

Source: ITE 1991.

southern part of the property. In addition, peak hour traffic and truck traffic may necessitate rerouting to relieve the increased volume of tractor trailers utilizing residential roads of North Charleston. Overall traffic flow on Base roads would be improved after redevelopment as security entrance gates are removed to allow unimpeded access to the Base property.

Marine Transportation

Development Concept 3B proposes no new maritime construction which would increase the volume of ship movement on the Cooper River. Marine transportation would be limited to vessels entering the shipyard for repair, new vessels leaving the shipyard, and vessels supplying shipyard support industries. No adverse impacts are anticipated with this reuse plan.

Rail Facilities

No changes to the existing railway network are proposed in this development concept. Rail activities would be maintained to provide service to the shipyard and maritime industrial activities.

Air Facilities

Air facilities would not be impacted by this development concept.

Mass Transportation

It is likely that bus service would be expanded throughout the base.

4.8.2 Alternative Reuse Scenario 1

Road Network

No changes to the existing roadway network are proposed in this alternative. The current roadway network would continue to serve the buildings located at the base. Traffic flow patterns would improve due to the removal of the security entrance gates.

Vehicular Trips

This scenario is expected to generate the following traffic volumes:

- ADT for a weekday will be 62,583 vehicle trips. Of this traffic volume, 5,007 vehicle trips (approximately 8%) would be truck trips (average truck trips would increase from current levels of about 3,060 to 5,007 per day);
- ADT for a weekend would be 19,907 vehicle trips;
- The weekday PM peak hour traffic would be 7,491 vehicles, with 1,815 vehicles entering and 5,676 vehicles leaving;
- The weekend peak hour traffic would be 1,695 vehicles, with 845 vehicles entering and 850 vehicles exiting; and
- A weekday parking demand of 17,773 spaces and a weekend parking demand of 13,057 spaces.

These traffic volume estimates assume that the occupancy of all structures would be at 100% at the end of the 20-year development period. The 6% increase in traffic volume is attributable to attractions such as commercial/retail center, the mixed use area, waterfront

developments, and public recreational facilities. In the short term, vehicle traffic volumes associated with the base are expected to decrease further as Navy activities are scaled back and before redevelopment activities begin. No adverse traffic impacts are expected with this alternative.

Marine Transportation

This alternative proposes no new maritime construction. Marine transportation will be limited to vessels entering the shipyard for repair. No adverse impacts would result due to this alternative.

Rail Facilities

No changes to the existing railway network are proposed in this alternative. The existing rail system would continue to provide service to the shipyard and industrial area.

Air Facilities

Air transportation facilities would not be impacted by the development proposed in this alternative.

Mass Transportation

It is likely that bus service would be expanded throughout the base.

4.8.3 Alternative Reuse Scenario 2

Road Network

Significant changes to the existing roadway network proposed in this alternative include:

- Realignment of the McMillan and Cosgrove Avenues into a promenade which would provide access to the northern portion of the base; and
- Construction of a loop road that would encircle the office land use at the McMillan and Cosgrove Avenue promenade.

Vehicular Trips

Alternative Reuse Scenario 2 is expected to generate the following traffic volumes:

- Average daily traffic (ADT) for a weekday would be 74,280 vehicle trips. Of this traffic volume, 3,373 vehicle trips (approximately 5%) will be truck trips (this represents only a slight increase from the current average truck trips of 3,060 per day);
- ADT for a weekend would be 34,436 vehicle trips;
- The weekday PM peak hour traffic would be 8,704 vehicles, with 2,682 vehicles entering and 6,022 vehicles leaving;
- The weekend peak hour traffic would be 2,638 vehicles, with 1,317 vehicles entering and 1,321 vehicles exiting; and
- A weekday parking demand of 14,579 spaces and a weekend parking demand of 6,942 spaces.

These traffic volume estimates assume that the occupancy of all structures would be at 100% at the end of the 20-year development period. Although these traffic volumes are elevated above 1993 traffic volumes, they are only slightly elevated above 1990 AADT traffic volume of 58,550 trips per day for the Charleston Naval Base. Peak hour weekday traffic for this alternative would be slightly higher than for Development Concept 3; however, weekend traffic for Alternative Reuse Scenario 2 would be substantially larger (almost triple) the volume of weekend traffic resulting from Development Concept 3. This large volume of weekend traffic would be attracted by the waterfront commercial uses and increased opportunities in Scenario 2.

Marine Transportation

This alternative proposes no new maritime construction. Marine transportation will be limited to vessels entering the shipyard for repair. No adverse impacts are expected with this reuse scenario.

Rail Facilities

Some changes to the existing railway network are proposed in this alternative. The existing rail system would be upgraded and continue to provide service to the shipyard and industrial area.

Air Facilities

Air transportation facilities would not be impacted by the development proposed in this alternative.

Mass Transportation

It is likely that bus service would be expanded throughout the base.

4.8.4 Cumulative Impacts

In the short term, no cumulative vehicle transportation impacts are expected as operations at the Charleston Naval Base are realigned and traffic volumes associated with the Base decrease. Transportation improvements currently funded and implemented (Section 4.8.1) will continue to add capacity and improve traffic management control to the regional Charleston Roadway system. However, increased use of South Carolina State Port Authority (SCSPA) terminals will cause increases in truck and railroad transportation volumes, independent of redevelopment at the Base. The SCSPA terminals are currently at or near capacity and will need to expand soon in order to maintain growth. SCSPA is currently studying the feasibility of developing a new port terminal at Daniel Island, a predominantly undeveloped Island east of the base. It is likely that if SCSPA develops a terminal at the base, as proposed in Development Concepts 3 and 3A, the proposed Daniel Island facility may not be needed.

Likewise, the CSX Intermodal Rail Yard is at capacity and will need to expand in order to accommodate intermodal transportation from the terminals. Any surplus terminal volume that cannot be handled by either CSX or Norfolk Southern will have to be transported by truck.

4.8.5 Measures

Recommended improvements in the regional and local roadway network, especially the construction of a new interchange at I-26, would mitigate any incremental increases in vehicle traffic volume associated with Concepts 3 and 3A. The actual alignment of this new vehicular/rail access to the proposed Marine Cargo Terminal will be finalized by the Redevelopment Authority, the developer of the Cargo Terminal, SCDOT, SCDHEC, and EPA so as to avoid contaminated areas and minimize impacts to residential areas not on the Base. In addition, potential impacts to the navigability of Shipyard Creek, and potential mitigative measures (e.g., draw/swing bridge) will be addressed by OCRM and the USACOE in their permit review process to be conducted during the design of this facility. Since this

crossing of Shipyard Creek is neither proposed nor endorsed by the Navy, responsibility for implementing any mitigation measures will be borne by the Redevelopment Authority and local/state and federal regulatory agencies. Intersection reconfiguring or roadway elevating would mitigate conflicts between increased rail and roadway traffic volumes at intersection points. Capital investment into improving the existing rail facilities would facilitate redevelopment of the existing shipyard and industrial area. In addition, transportation demand management techniques, such as ridesharing and modified work schedules, have the potential to reduce peak hour traffic generated by the development. Mass transportation service directly onto the former base would facilitate a reduction in ADT generated by the development.

4.9 Socioeconomics

4.9.1 Alternative Reuse Scenario 3: Development Concept 3

Development Concept 3 seeks to capitalize on the base's waterfront location, the SCSPA's intent to build a new terminal in Charleston independent of the base closure decision, and the potential to retain and create high paying jobs in the area. Implementation of the plan would require approximately \$967 million in capital investment over a period of about 20 years, including approximately \$60 million in area-wide improvements such as utilities and storm water management improvements, and \$600 million for constructing a new Marine Industrial Park, Cargo Terminal, and Intermodal Rail Yard (BEST 1994).

Job creation and retention rank highest in the community's concern about the base closure. Table 4-22 presents estimates of jobs that will be eliminated as part of closure and Table 4-23 presents estimates of jobs that would be retained and created if Development Concept 3 is implemented. Although the Naval Base and Shipyard are closing, some functions (e.g., the Naval Hospital) are remaining but downsizing as a result of the closure. The total reduction in Navy employment in the Charleston MSA from 1994 levels will be 20,842, of which 5,640 are civilians.

Employment estimates for Development Concept 3 were obtained from the Charleston Naval Complex Reuse Plan (BEST 1994) and were calculated using the RIMS model. These estimates include the 1,200 shipyard jobs that would be retained if the shipyard is transferred to a private operator, and the approximately 1,300 Federal agency jobs associated with the National Oceanic and Atmospheric Administration (NOAA), the State Department, the Defense Finance Accounting Service (DFAS) Center, and the National Civilian Community Corps (NCCC) which are expected to be in place by early 1995. Total employment created/

<p align="center">Table 4-22</p> <p align="center">NAVAL COMPLEX EMPLOYMENT</p> <p align="center">1994 AND POST-CLOSURE^a</p>			
	1994 ^b	Post-Closure	Decrease in Employment
Military	18,022	2,820	15,202
Civilian	9,337	3,697	5,640
Total	27,359	6,517	20,842

^a Naval Complex includes all functions, including functions not slated for closure.

^b Total 1994 shipyard employment = 4,720.

Source: U.S. Navy Base Closure Office 1994.

<p align="center">Table 4-23</p> <p align="center">REUSE PLAN EMPLOYMENT ESTIMATES</p> <p align="center">20-YEAR PLAN IMPLEMENTATION</p>	
Type	Employment Estimate
Office ^a	3,800
Shipyard	1,200
Industrial/Shops	800
Class A Marine Industrial Park	4,000
Total	9,800

^a Includes approximately 1,300 federal jobs with NOAA, State Department, DFAS, and NCCC.

^b Includes port, cargo terminal, and port-related jobs.

Source: *Charleston Naval Complex Reuse Plan*, June 1994.

retained by Development Concept 3 is projected to be approximately 9,800 direct jobs over the 20-year period of implementation (BEST 1994). In the short-term, 2,000 to 4,000 jobs are projected to be retained due to continued shipyard operations, federal employment, and reuse of existing industrial buildings at the Base (BEST 1994).

Specific impacts of Concept 3 are discussed in the following sections.

Population

With closure of the Naval Base, the Navy will be withdrawing over 15,000 personnel from its 1994 force strength. Assuming an average 2.7 persons per household for the MSA, approximately 40,500 military personnel and dependents will be leaving the Charleston area. Assuming that 25% of the total projected employment (or about 2,500 jobs) would be taken by a person from outside the MSA moving to the Charleston area, approximately 6,600 new persons would relocate to the region, a net reduction of 33,900 people from the Charleston MSA over the next 20 years.

Population growth projections by the U.S. Census and other governmental agencies made prior to the Base closure decision overstate the Trident area population growth potential, at least over the next several years. Even if Development Concept 3 is implemented immediately, there would be a net job loss and a delay of several years before the more significant job-creating elements of the plan (e.g., the Cargo Terminal) are in operation. Although it is possible that healthy sectors of the Trident Region economy, such as the visitor and medical industries, may expand enough to offset some of the job and population loss caused by the Base closure, it is unlikely that population will grow or even maintain its current levels for the next several years.

It is unclear how much of the civilian population can be retained in the Charleston area while Development Concept 3 is being implemented; however, assuming that 20% of those 5,640 civilians losing their jobs would relocate out of the area, about 4,510 people (not including dependents) would remain in the area. Despite employment opportunities created by the relocation of Federal agencies to Charleston and the planned retention of about 1,200 civilian jobs at the shipyard, there would still be approximately 1,130 unemployed civilian workers who would leave the area before new employment opportunities are created. It is likely that the higher skilled labor force would relocate rather than take unskilled minimum-wage jobs.

Economy, Employment, and Income

The military is a significant component of the Trident region's economy. As such, Base closure will alter the structure of the economy. However, the military presence in the economy, as expressed by military employment, has been declining since at least 1989, well before the Base closure announcement. From 1989 to 1993, Naval Base and Shipyard employment as a share of total Trident region employment has declined from 18% to 10.7%. This decline was concurrent with a marked increase in employment in the service sector, notably in the visitor industry.

The recent employment trends show a reduction in high-wage jobs and a shift toward lower paying service sector jobs in the Charleston MSA. Although Development Concept 3 cannot entirely make up for the loss of Naval Base jobs, especially in the short-term, the types of industries slated for the Base under Concept 3 would generate jobs with relatively high wages. Over 1,300 federal jobs would be established by early 1995. In addition, 1,200 shipyard jobs are expected to be retained if the shipyard is privatized. These two sources of jobs combine to make up or retain over 40% of the civilian jobs being eliminated by closure. Table 4-24 shows direct and total employment associated with Development Concept 3.

Table 4-24		
EMPLOYMENT IMPACT		
	Direct	Total
Estimated Job Loss from Closure	20,842	40,446
Estimated Job Gain from Reuse	9,800	32,105
Net Loss	11,042	8,341

Note: Direct employment is that directly employed at the complex (presently and post closure). Total employment includes direct, indirect, and induced employment resulting from employment at the complex. Total employment estimates were derived from direct estimates and the Regional Input-Output Modeling System (RIMS) developed by the U.S. Department of Commerce.

Source: U.S. Navy Base Closure Office 1994; BEST 1994.

Direct employment estimates were obtained from the Navy and Concept 3, and total employment was estimated using the U.S. Department of Commerce Regional Input-Output Modeling System (RIMS) for the Charleston Metropolitan Statistical Area (MSA) and port employment estimates (HRA 1994). Total employment includes direct, indirect, and induced employment. The Base closure will result in the direct loss of 20,842 military and civilian jobs, while Development Concept 3 is expected to directly generate or retain 9,800 jobs, leaving a deficit of about 11,000 jobs. When indirect or "spin-off" jobs resulting from Base Redevelopment are considered, the net loss of jobs would drop to about 8,300 (see Table 4-24).

The Cargo Terminal is expected to be the primary economic catalyst in Development Concept 3 (HRA 1994). Planning, construction, and operation of a new Cargo Terminal would create jobs and increase the area's attractiveness to manufacturing companies and other

industries that rely on import/export activity. Development Concept 3 projects that the job-creating potential of a new 8 million ton Cargo Terminal would generate 5,700 port industry jobs and 16,800 port user jobs, including both direct and indirect employment (HRA 1994). Because of the diverse nature of port operations, the types of jobs would include administrative, transportation, manufacturing, and service sector jobs.

The infusion of approximately \$967 million into the local economy over 20 years for capital improvements would also stimulate the economy and create jobs. Based on the RIMS model and capital improvement estimates, approximately 25,000 direct, indirect, and induced jobs can be created by new construction and maintenance activity resulting from the proposed capital improvement investment over a 20-year period. These jobs include construction, renovation, landscaping, general contractors, as well as local building retail and wholesale supplies. This would benefit the local economy by providing relatively high-paying jobs during the interim phase of plan implementation. It would also shore up the construction sector, which has declined in the Trident Region in recent years.

The Navy's planned expenditure for site remediation and environmental cleanup work would also result in beneficial impacts to the local economy. Although not all contractor employment generated by environmental cleanup work (i.e., asbestos removal, groundwater remediation, lead-based paint removal, etc.) would be locally based, indirect spin-off effects, such as travel, lodging, and meals would be a beneficial impact to the local economy. The Navy and the Redevelopment Authority would use local contractors for these services to the extent practical.

Economic and employment impacts can be summarized as follows:

- There would be a substantial net loss of jobs immediately following closure, which would be reduced upon full implementation of Development Concept 3. Current estimates do not indicate that present employment levels would be regained in 20 years, although Concept 3 would compensate for civilian jobs eliminated by closure.
- The Navy's withdrawal accelerates a trend of the military's declining share of employment in the Trident region.
- The Preferred Development Plan's emphasis on port, shipyard, and Marine Industrial Park activity combined with the establishment of Federal employers (i.e., NOAA and DFAS) at the complex provides the foundation for attracting or expanding relatively high-wage employment. The construction and operation of the proposed complex would improve the balance of employment in the Trident region, which has been heavily dependent on government and services. Although the service sector has helped Trident's employment rate, low wages in the sector make it a poor substitute for the loss of

high-paying Federal government jobs. Increases in construction, manufacturing, and trade (especially wholesale) would increase wages.

Taxes and Revenues

The short-term fiscal impacts of Base closure and reuse on the City of North Charleston would be negative due to the loss of income tax revenues resulting from the loss of jobs and the delay before property tax revenues can be collected. The Federal government does not currently pay local property taxes or contribute payment in lieu of taxes to North Charleston. However, approximately two-thirds of the 1,500 acres available in Development Concept 3 would become revenue-generating. A majority of the revenue-producing land would include the port/Cargo Terminal, which would not begin construction for about five years (BEST 1994). Over time the conversion to revenue-generating property for North Charleston and Charleston County would have a positive impact. When property at the Base becomes taxable, it will have effective millage rates of \$64.50 or \$65.00 (1994 rates), depending on the type of property.

Development Concept 3 would generate cumulative tax revenues of \$260,000 in five years and \$740,000 in 20 years for the city of North Charleston (HRA 1994). However, the cumulative operating costs to the city of North Charleston are estimated at \$4.8 million or about \$960,000 per year, and would result in fiscal impacts to the City. Either new sources of revenue would need to be identified (see federal grants or loans) or existing services would have to be cut in order for the City of North Charleston to accommodate these operating costs.

If the SCSA assumes ownership of the Cargo Terminal, they would become responsible for the fiscal aspects of site development (i.e., security, infrastructure, etc.). SCSA, however does not pay property taxes and is forbidden from making payments in lieu of taxes (Groseclose 1994). If the SCSA leases space to private companies, the tenants would be responsible for paying property taxes.

Economic Development

Development Concept 3 is consistent with existing local economic development goals of retaining existing businesses and attracting new industries and enterprises. The port would serve as the cornerstone for adding capacity to the Port of Charleston to meet existing demands. Development Concept 3 would reduce the capacity constraints which have prevented the port's growth. SCSA has already identified the need to expand in the Charleston area and has indicated that it will construct a new port terminal either at the

former Naval Base or at Daniel Island (Groseclose 1994). A new Cargo Terminal would enhance the area's attractiveness to manufacturers and other industries that need intermodal transportation, and would improve Charleston's competitive position with respect to comparable southeastern metropolitan areas.

Housing and Development Trends

The expected decline or stagnation of population in the immediate area of the base, the large number of military households vacating their homes, and the availability of housing structures transferred by the Navy would exert downward pressure on housing demand and prices. This impact would be most pronounced in Hanahan/North Charleston, where the largest concentration of Navy population, both military and civilian currently reside.

As a result of the McKinney Act Process, existing housing units will be utilized by homeless and other community services organizations. The North Charleston Housing Authority is one of the identified lead agencies in providing centralized landlord functions and coordinating the use of facilities at the Base by McKinney Act providers. As noted in Appendix B (McKinney Act Screening Process), about 35 single and duplex housing units will be utilized in the Capehart Housing Area. Congregant housing to be used by community service providers include 200 units in Building NS 65, NS 66, 672, and NS 67.

Although the availability of these housing units will improve the housing services provided by local community services organizations, potential conflicts exist between Development Concept 3 and the use of congregant housing in the southern portion of the Base. The proposed development of the Cargo Terminal and the Intermodal Rail Yard within 5 to 10 years would require that the tenants of the congregant housing to relocate. These conflicts will need to be resolved by the Redevelopment Authority, or the developer, to allow for phasing of the plan and provision of important housing resources. These conflicts are discussed in greater detail in Section 5.1 of this FEIS.

4.9.1.1 Alternative Reuse Scenario 3: Development Concept 3A

The beneficial and adverse effects of Development Concept 3A on population, employment and income, taxes and revenue, economic development, and housing would be similar to those previously discussed for Development Concept 3. In general, these effects would be positive and would partially negate the economic impacts of Base closure.

4.9.1.2 Alternative Reuse Scenario 3: Development Concept 3B

Development Concept 3B would create approximately 12,344 jobs, primarily in the maritime industrial/shipyard and office/training activities. This figure assumes that Concept 3B reaches its maximum build-out potential and no office or industrial space within the complex is underutilized. Potential new employment that would be generated by this plan is presented in Table 4-25.

Table 4-25		
POTENTIAL EMPLOYMENT GENERATED FROM DEVELOPMENT CONCEPT 3B		
Employment Category	From	To
Office/Training	2,000	5,327
Industrial/Shops	0	3,676
Shipyard	0	2,816
Cultural Park	0	25
Mixed Use/Civic	0	500
Total	2,000	12,344

A continuation in office activities associated with the State Department, NOAA, National Civilian Community Corp. (NCCC), and new office developments would combine to create 2,000 to 5,327 office jobs in Concept 3B. Projected employment associated the cultural park and mixed use/civic areas employ up to 25 employees and 500 employees, respectively. Modifications of development in the industrial areas cause an increase in industrial employment compared to Alternative Plans 1 and 2, but less employment than was associated with Development Concepts 3 and 3A. However, the employment at the shipyard almost doubles (2,816 employees) in comparison to other scenarios due to its expansion in Concept 3B.

The creation of these additional 12,344 jobs and the resulting increase in disposable income within the region would have a positive impact on the economy of the Charleston area. As the additional workers spend a portion of their disposable income in the area, local merchants and service industries will benefit from the increased patronage. These merchants will then spend a portion of their increased profits in the region, thus "multiplying" the positive effects of the initial increase in regional economic activity.

By utilizing the Regional Input-Output Modeling System (RIMS II) developed by the U.S. Bureau of Economic Analysis, an estimate of the maximum number of additional or "spin-off" jobs that could be created under this alternative has been determined. The model predicts that approximately 11,025 indirect jobs would be created under Concept 3B if the facility reaches its maximum build-out potential. Hence, Concept 3B could lead to the creation of as many as 23,369 direct and indirect jobs in the regional economy.

If the former Naval Base is not utilized to the fullest extent practicable pursuant to Concept 3B, then the total number of jobs generated at the Base would be less than the 12,344 jobs projected earlier in this section. Consequently, if fewer jobs were created under this scenario, the resulting indirect employment effects would also be less.

In addition to the long-term economic impacts associated with this increase in employment, the approximate \$209 million that will be spent on implementing this alternative will have a positive impact on the regional economy over the 10- to 15-year time frame of Plan implementation. As the \$209 million is spent renovating and reconstructing the facilities at the former Naval Base, additional short-term construction jobs will be created in the regional economy. Similar to the long-term effects caused by the permanent reuse of the facility, these one-time expenditures will lead to an increase in indirect employment throughout the Charleston area.

However, this injection of funds for construction and renovation is short-term in nature. Therefore, the resulting direct and indirect positive economic effects will also be experienced for a short duration. The short-term employment effects have not been included in the estimates of the direct and indirect employment impacts.

As described in the previous section, Concept 3B could directly create as many as 12,344 jobs in the City of North Charleston. Under optimal development, these jobs would involve federal government offices, ship building/repair, manufacturing firms, business and professional service industries, nonprofit/human service organizations, and entertainment industries. Table 4-26 shows the estimated distribution of jobs by industry type as well as lists the average weekly wage in the Charleston MSA for each industrial sector (South Carolina Employment Security Commission 1994).

Assuming that the facilities at the former Charleston Naval Base are utilized to their maximum potential, Concept 3B's direct impact on employee earnings on the Charleston MSA has been estimated to be approximately \$760,627,000 annually (as expressed in 1993 dollars).

Similar to the employment impacts discussed previously, this increase in employee earnings and disposable income will result in additional positive impacts to the regional economy. As individuals spend a portion of their additional earnings in the local economy,

<p align="center">Table 4-26</p> <p align="center">ESTIMATED EMPLOYMENT AND AVERAGE WEEKLY WAGE BY INDUSTRIAL SECTOR FOR DIRECT EMPLOYMENT RESULTING FROM DEVELOPMENT CONCEPT 3B</p>			
Industrial Sector	Maximum Number of Direct Jobs	Average Weekly Wage (\$)	Estimated Direct Impact to Employee Earnings (\$)
Federal government	5,327	737	405,405,000
Ship building	2,816	581	151,973,000
Manufacturing	2,576	581	149,296,000
Business and professional services	650	362	19,822,000
Non-profit/human services	500	362	12,416,000
Entertainment Industries	25	362	614,000
Other	450	378	21,101,000
Total	12,344		760,627,000

Source: South Carolina Employment Security Commission 1994; Ecology and Environment, Inc. 1995.

the regional demand for goods and services will increase. This increase in demand will lead to an increase in sales and profits at local establishments. In response, local vendors will hire additional personnel. In turn, these new employees will spend a portion of their additional disposable income in the regional economy, thus multiplying the positive economic effects of the initial injection of funds.

By utilizing the RIMS II model, a projection of the indirect or multiplier effects associated with Concept 3B can be made. The model predicts that the economic activity that would result from Concept 3B could indirectly create up to \$424,053,000 annually in employee earnings in the Charleston MSA. Thus, if the facilities at the former Charleston Naval Base are fully reutilized in accordance with Concept 3B, approximately \$1.1 billion annually in employee earnings in the regional economy could be created.

Additional short-term positive impacts to the regional economy will occur as funds are spent to reconstruct and renovate the former Base. The increased construction employment will positively affect employee earnings and disposable income in the local economy. This increase will, in turn, be multiplied and further expand the total employee earnings in the region.

However, due to the short-term nature of the injection of funds, these positive impacts will only be experienced in the short-term (i.e., 5 to 10 years). These construction impacts have not been included in the \$1.1 billion figure presented above.

Taxes and Revenues

The potential tax revenues for Development Concept 3B were developed by estimating the value of taxable land uses on the property at full buildout. Market values for industrial and office properties (dollar value per square foot) were generated from estimates developed by Growth Strategies Organization, Inc. (1994). Other land uses on the property (i.e., community support, mixed use/civic, and housing), were assumed to be tax exempt. The taxable values for office, warehouse, and industrial uses were then developed by figuring the percentage of market value assessed for taxes by the City of North Charleston (Henderson 1995). Current millage rates for the City of North Charleston were used to estimate the tax revenue potential for Plan 3B. Table 4-27 presents potential tax revenues for this redevelopment scenario.

Table 4-27				
POTENTIAL TAX REVENUES FROM DEVELOPMENT CONCEPT 3B				
	Land Use			
	Office	Industrial	Warehouse	Total
Square Footage	1,515,924	1,100,580	1,535,328	4,151,832
Taxable Value/Square Foot ^a	\$13.00	\$14.00 - \$25.00	\$14.00	—
Value	\$19,707,012	\$15,408,120 - \$27,514,500	\$21,494,592	\$56,609,724
Percentage of Market Value Assessed ^b	6.0%	10.5%	10.5%	—
Assessed Value	\$1,182,421	\$1,617,853 - \$2,889,023	\$2,256,932	\$5,057,206
Millage Rate ^b	53.5	64	64	—
Taxes Generated	\$63,260	\$103,543 - \$184,897	\$144,444	\$311,246 - \$392,601

^a GSO 1994.

^b Henderson 1995.

Concept 3B provides approximately 4,151,830 square feet of tax revenue-generating building space in the City of North Charleston. This property would generate between \$311,245 to \$392,600 in tax revenues annually. The 1,515,925 square feet of office space would generate approximately \$63,260 in taxes annually. The 1,100,580 feet of industrial

space would generate taxes ranging from \$103,543 to \$184,897 annually. The 1,535,328 square feet of warehouse space would generate approximately \$144,444 in tax revenues annually.

4.9.2 Alternative Reuse Scenario 1

This alternative involves a lower level of capital investment in the base, maximizing use of the existing assets. Although all available land would be used, most of it would not generate tax revenue, and would result in a lower potential for job creation and revenue generation than Alternative Reuse Scenario 3 (including Development Concepts 3, 3A, or 3B). Maximum direct job potential for this scenario would be 9,870 and cumulative revenues to North Charleston over 20 years would be \$415,000 (Best 1994; HRA June 1994). Over the same time period this scenario would generate costs to North Charleston estimated at \$6.8 million (Best 1994). Because this scenario has a lower potential for job creation and proposes a minimal investment in the community compared to Alternative Reuse Scenario 3, it results in fewer beneficial socioeconomic impacts.

4.9.3 Alternative Reuse Scenario 2

Under this scenario, job creation would revolve around office, shipyard, and waterfront commercial/industrial districts; a unique feature of this scenario is its focus on creating a civic waterfront district. Job capacity potential ranges from 2,000 to 11,352 jobs, although the upper range of this estimate is based on capacity rather than likely demand for the jobs. Revenues to North Charleston over 20 years are estimated to be \$650,000. Of all the alternatives, this scenario would result in the highest estimated cost to North Charleston, \$5.8 million over the 20 year period of implementation (BEST 1994). The economic impact to the local economy would not be greater under this scenario than under Alternative Reuse Scenario 3 because it does not invest as much in establishing a strong industrial base and consequently has less potential for job and revenue generation.

4.9.4 Cumulative Impacts

The primary cumulative socioeconomic impacts associated with the proposed action are associated with the concurrent closure/realignment of other major Navy facilities in the Charleston MSA. The closure and/or realignment of these facilities are expected to have a large negative impact on the regional economy, however, the realignment of NISE East, to the NWS Charleston will help alleviate some of the negative economic effects. The relocation

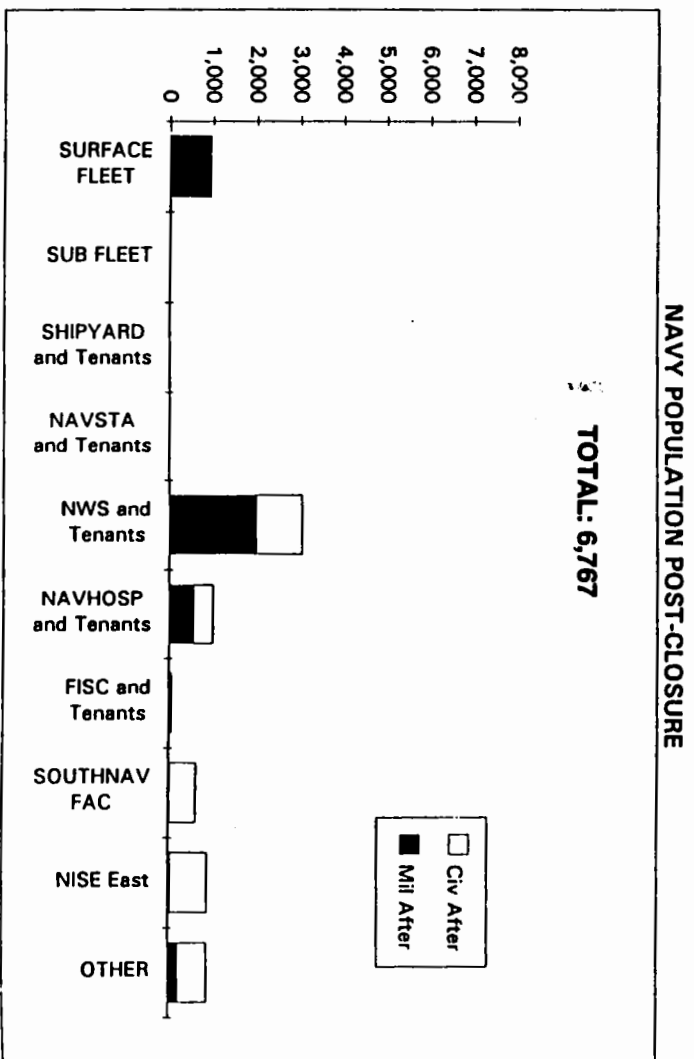
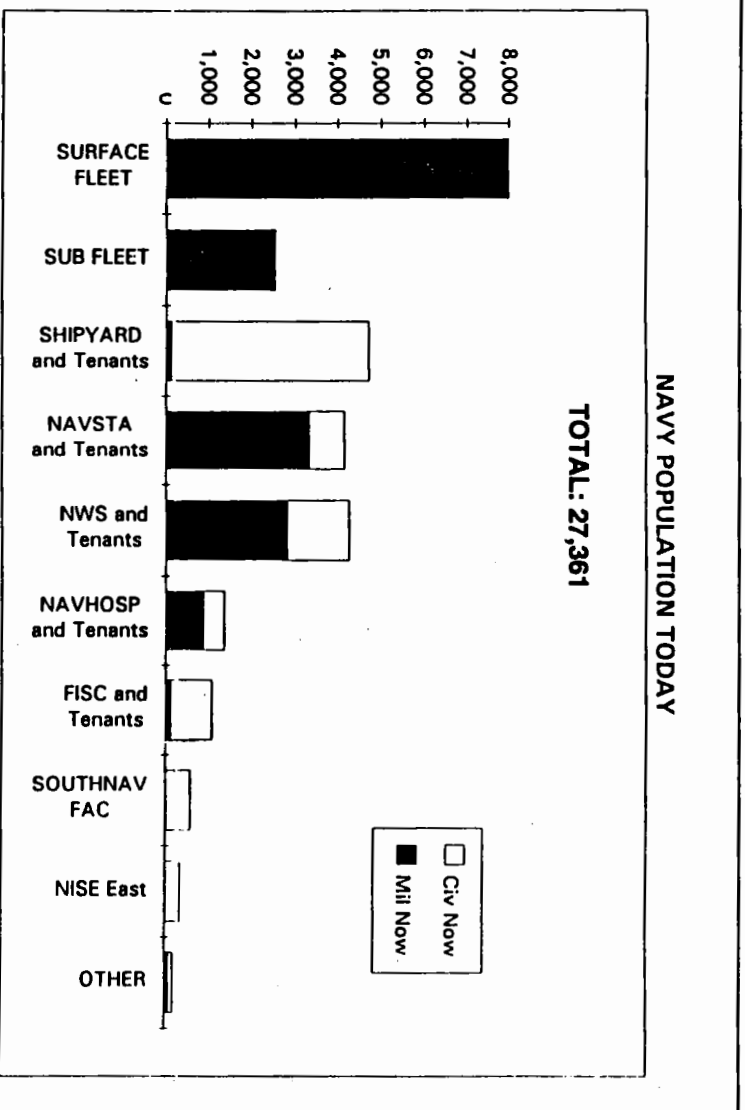
of 547 billets (total of about 1,500 people) to the Charleston MSA as a result of the NISE East Realignment will affect some of the impacts associated with loss of employment opportunities, the reduction of the regional tax base, and the potential drop in housing prices that would be caused by closure of the naval base.

Table 4-28 and Figure 4-7 illustrate Navy facilities in the Charleston area which are subject to closure/realignment. As indicated, the cumulative population decline will be about 20,842 people.

<p style="text-align: center;">Table 4-28</p> <p style="text-align: center;">CUMULATIVE EMPLOYMENT (BILLETS) IMPACTS RESULTING FROM BASE CLOSURE AND REALIGNMENT IN THE CHARLESTON AREA</p>				
	Military Now	Military After	Civilian Now	Civilian After
Surface fleet	8,119	—	—	—
Sub fleet	2,546	—	—	—
Shipyard and tenants	118	—	4,602	—
NAVSTA and tenants	3,325	—	822	—
NWS and tenants	2,817	1,984	1,439	1,060
NAVHOSP and tenants	887	555	480	460
FISC and tenants	119	1	966	61
SOUTHNAVFAC	11	16	570	611
NISE East	4	46	346	842
Other	76	218	112	663
Total	18,022	2,820	9,337	3,697

Source: BCO 1994.

Alternative Reuse Scenario 3 (including Concepts 3, 3A, and 3B), in combination with base closure, reinforces the trend of decreasing military employment in the Trident Region. The net loss of federal jobs contributes to the recent employment losses in other high wage sectors of the economy, such as construction. This effect would be partially mitigated by plans to attract manufacturing and wholesale trade businesses.



SOURCE: BCO, 1994

Figure 4-7 CUMULATION POPULATION IMPACTS RESULTING FROM BASE CLOSURES AND REALIGNMENTS IN THE CHARLESTON AREA

4.9.5 Mitigation

Alternative Reuse Scenario 3 (including Concepts 3, 3A, and 3B), in and of itself, mitigates the socioeconomic impacts of the proposed action. Other than the Redevelopment Authority and the local community ensuring that the plan is implemented, no other mitigation measures are necessary.

4.10 Infrastructure and Utilities

The following section provides a discussion of projected impacts to utility services including potable water supplies, wastewater treatment, steam generation and distribution, storm water management, and electrical power distribution as a result of the proposed action.

4.10.1 Alternative Reuse Scenario 3: Development Concept 3

Utility service in the project area would not be significantly impacted by the land uses proposed under Development Concept 3. Though Development Concept 3 would result in the greatest employment, there would be a net decrease in employment at the base from current conditions with a corresponding decrease in the demand for water and wastewater generated at the base. Assuming a net reduction of about 8,300 people (or about 30%), utility usage would drop by about 30%. According to representatives from the Charleston Commissioners of Public Works and the North Charleston Sewer District there currently exists a surplus water capacity of approximately 55 mgd and a surplus sewage treatment capacity of approximately 9 mgd (Cook 1994; Kauffman 1994). Therefore, there would be no affect on these services. Likewise, it is expected that the existing purveyors of electrical power to the base (Santee Cooper Electric Company and the South Carolina Electric and Gas Company) would continue to provide reliable electrical service to any industrial, commercial, residential use or single large customer which may develop on the property.

As stated in Section 4.10, steam, which is the source for heating and hot water, is produced at the Foster Wheeler Waste-to-Energy plant, located adjacent to the base, and distributed through a series of overhead and underground pipes. Although the Navy has been using steam from this plant for the past five years and is under contract for the next 15 years, the plant has not always been a reliable source of steam and is not considered a viable source of heating for new customers. There is a No. 2 oil-fired backup boiler located adjacent to the existing power plant that is used when minimum steam supplies are not being met by the Foster Wheeler plant. New customers may not tolerate interrupted steam supplies and will demand a more reliable source of heating such as electricity (BEST 1994).

In addition to capacity, each respective utility would need a distribution network that can adequately service any new customer's needs. The CCPW can adequately convey water supplies to the base through their own piping network, however the distribution of water throughout the base is more tenuous. The existing piping network is old and the actual condition of the piping network is unknown (Cook 1994). There is speculation however, that in cases where the piping is made from iron, the water has reacted with the iron creating a tuberculated condition where the pipe diameter has actually decreased (Cook 1994). The condition of the water pipes, in conjunction with increasing demands has created inadequate water pressure to meet current demands in the residential areas of the base and at the piers. It is possible that new users of the property would experience similar problems if the existing water distribution system is used. Following transfer of the property via deed, any improvements to this system would be the responsibility of the Redevelopment Authority or another entity charged with redevelopment.

As stated in Section 4.10, there are problems with the existing wastewater conveyance system on the base. It is suspected that in areas where this conveyance system crosses the storm water conveyance network, there exists an Infiltration/Inflow problem which contributes as much as .75 mgd to the system. The Navy will be responsible for maintaining the wastewater collection system on the base until the title of the property is transferred. Following this date, the Redevelopment Authority or other entity charged with redevelopment would be responsible for undertaking any corrective actions necessary to comply with regulatory requirements and local ordinances including modifications to the existing on-base wastewater collection system.

The existing electrical power distribution system is adequate to meet the short-term electrical demands of new users. However, long-term demand would require significant improvements to the existing electrical infrastructure, such as upgrading the 2.4 kv lines to 13.2 kv.

Storm water runoff is generally contained by permeating through porous soils such as sand, draining into wetlands, or being directed into manmade structures such as detention or infiltration ponds. As some of the permeable soils are paved over or wetlands are filled, it can be expected that there would be an increased amount of storm water runoff.

Under Development Concept 3, there are several components that if developed would significantly increase the amount of impervious surface and therefore the magnitude of storm water runoff. Most noteworthy are the Cargo Terminal, Marine Industrial Park, marina, and rail yard improvements. Table 4-1 shows the acreage of the different land use/vegetative cover types which would be impacted by these four reuse components. Of particular concern

are the wetland, wooded, and dredge disposal vegetative cover types whose sizes would decrease with Concept 3. Conversion of these vegetative cover types from permeable surface types to impermeable surface types would lead to an increase in the magnitude of storm water runoff. The existing storm water system would need improvements to accommodate this increased runoff as the flat topography of the site does not naturally drain well.

Using the Soil Conservation Service (SCS) storm water model, estimates of existing storm water runoff volumes for the 10-year and 2-year frequency storm events were calculated in addition to estimated storm water runoff volumes which may occur if Development Concept 3 is implemented. Acreage estimates for existing vegetative covers and future land uses, given the implementation of Concept 3, were derived from GIS databases. The vegetative cover database was compiled from digital aerial imagery and the future land use database was compiled from CAD drawings supplied by the BEST Committee.

Table 4-29 shows peak storm water runoff volumes for the 2-year and 10-year frequency storm events under pre-development and post-development conditions. As is

Table 4-29 PEAK STORM WATER RUNOFF RATES UNDER PREDEVELOPMENT AND POST-DEVELOPMENT CONDITIONS FOR THE 2-YEAR AND 10-YEAR FREQUENCY STORM EVENTS AT THE CHARLESTON NAVAL BASE		
	2-Year (cfs)	10-Year (cfs)
Pre-Development	1,657	2,873
Post-Development	2,121	3,537
Percentage Increase	28%	23%

Key:

cfs = Cubic feet per second.

Source: Department of Agriculture 1986.

shown, implementation of Development Concept 3 would increase storm water runoff volumes from present conditions. Depending on the final engineering plans for the land uses on this part of the base, drainage patterns would be such that storm water runoff from the Cargo Terminal at the north of the Base would drain into the Cooper River as would storm water runoff from the Cargo Terminal at the end of the base. Storm water from the rail yard would also drain into the Cooper River. The most significant impact to storm water runoff

volumes would come from the development of the Marine Industrial Park. This development would occur on existing open space areas which currently contribute minimally to storm water runoff volumes. Some of this area currently drains to the east, into the Cooper River, however, a large portion drains naturally west, into Shipyard Creek. Development of this Marine Industrial Park would increase storm water volumes which drain into Shipyard Creek.

The City of North Charleston does not have any storm water management regulations, however their current administrative policy is that post development storm water discharge from a site should not exceed predevelopment conditions for the 2 year and 10 year frequency, 24-hour duration storm event (Darymple 1994). Assuming effective detention pond design, this policy can be satisfied at the naval base.

Most land disturbing activities in South Carolina must comply with the requirements and applicable regulations of the Erosion and Sediment Reduction Act of 1983 (48-18-10, *et. seq.*), or the Storm water Management and Sediment Reduction Act of 1991 (48-14-10, *et. seq.*). The final regulations, effective on June 26, 1992, pursuant to the Storm water Management and Sediment Reduction Act of 1991, establish the procedure and minimum standards for a statewide storm water program (SCCC 1993). The regulations of the Storm water Management and Sediment Reduction Act require that "permanent water quality ponds having a permanent pool shall be designed to store and release the first .5 inch of runoff from the site over a 24-hour period. The storage volume shall be designed to accommodate, at least, .5 inch of runoff from the entire site." For all projects, regardless of size, which are located within one-half mile of a receiving water body in the coastal zone, this criteria shall be storage of the first .5 inch of runoff from the entire site or storage of the first 1 inch of runoff from the built-upon portion of the property, whichever is greater. Storage may be accomplished through retention, detention or infiltration systems, as appropriate for the specific site (SCCC 1993).

Using the soil conservation services standard TR-55 detention storage routine, storage requirements were estimated for reducing post-development peak discharges to similar levels as the pre-existing peak discharges. The volume required for the 10-year event is approximately 60 acre-feet. As required, this volume is the greater of storage volume required to hold 0.5 inch of runoff from the entire area being developed; and 1.0 inch of runoff from the built upon area. Approximately 36 acre-feet of detention volume would be required for the 2-year event. Although the amount of land area required for 60 acre-feet detention basin would depend upon the depth, however, assuming a 4-foot deep basin, approximately 15 acres would be needed. This is sufficiently provided for in Development Concept 3.

No treatment is necessary for runoff from bridge surfaces spanning waters classified by the state as SB or SA waters. This runoff can be discharged through scupper drains directly into surface waters. However, the use of scupper drains should be limited as much as feasibly possible (SCCC 1993).

4.10.1.1 Alternative Reuse Scenario 3: Development Concept 3A

The impacts of Development Concept 3A on existing infrastructure and utility systems at the Base, and the need for both short- and long-term improvements would be similar to those discussed for Concept 3A. Storm water management and required storm water detention volumes as discussed for Development Concept 3 would also apply to Development Concept 3A.

4.10.1.2 Alternative Reuse Scenario 3: Development Concept 3B

As with all scenarios considered, if Concept 3B is implemented, the Redevelopment Authority will need to decide how utilities at the Charleston Naval Base will be operated and maintained. Currently, the Navy is responsible for the distribution and supply of all utilities at the point of entry to the Base. In order to avoid the complications of adding new users to the utility systems, it is crucial that the Redevelopment Authority commence an orderly transfer of the operations of these utilities to the respective suppliers before new users come on line.

Notwithstanding, the potential land uses and conceptual site layout under Concept 3B are similar to existing land uses so that no significant increase in utility demands is expected. However, most of the utility systems will require some repair or replacement in order to properly serve the needs of any new users on the Base. From a cost perspective, necessary expenditures to accomplish these improvements would be most similar to Reuse Scenario 2 because it reflects a similar functional arrangement of infrastructure facilities (e.g., sewer and water trunk lines) and includes uses that would result in similar utility demand.

Based on an average usage of 200 gallons per employee per day (ICMA 1988), anticipated uses under Concept 3B would consume approximately 2.5 million gallons of water daily (mgd). The CCPW currently has about 50 to 65 mgd of excess capacity, sufficient to serve the demands of Concept 3B.

All sanitary sewer wastes generated at the base are collected by gravity lines and are pumped to the main pump station located just north of Viaduct Road. From the main pumping station, all wastes are sent to the North Charleston Sewer District Wastewater Treatment Plant on the Cooper River near Shipyard Creek.

Assuming that wastewater generated at the base under Concept 3B will equal approximately 80% of water consumed (ICMA 1988), roughly 1.98 mgd would be generated. Converting this daily volume into flow rates would result in approximately 96.3 million cubic feet of flow per year, or 963,000 CCF (1 CCF = 100 cubic feet). The base generated 1,555,046 CCF in 1994 (Green 1995); therefore, this projection would represent a 38% reduction from current flow rates. The North Charleston Treatment Plant has an excess capacity of approximately 9 mgd; therefore, it is sufficient to meet the demands of Concept 3B. However, the existing sewage transport system has functional problems that would need to be corrected, such as cross-sections with storm water lines which contribute to an infiltration and inflow (I/I) situation. It is suspected that the I/I problem adds .75 mgd to the system load.

As with Concepts 3 and 3A, the existing electrical system is adequate to meet short-term needs, but will most likely require improvements, specifically upgrading existing 2.4 kilovolt (kV) distribution lines to 13.2 kV.

Because Concept 3B would not result in the creation of as much impervious surface as Concepts 3 and 3A, the amount of storm water runoff and related retention capacity is not expected to be as great. Using the TR-55 storm water model, estimated runoff rates for the 10-year and 2-year frequency storm events for Concept 3B were estimated to be 11% higher than predevelopment rates (see Table 4-30). This compares to a 28% increase for Concepts 3 and 3A. The storage volume required for storm water quality control would be approximately 50 acre-feet for the 10-year event and 30 acre-feet for the 2-year event, which would hold the first inch of runoff from the built-upon areas in the southern portion of the base. This compares with 60 and 36 acre-feet for the 10- and 2-year events under Concepts 3 and 3A.

In contrast to Concept 3 and 3A, development under Concept 3B would take greater advantage of existing mechanical systems at the Base. Shipbuilding and other maritime industrial activities under this plan would utilize the centralized steam distribution system associated with dockside repair and maintenance activities, building heating, and hot water. Also, these uses could utilize the Base's looped compressed air distribution system used to power machinery such as grinders and other power tools, sand blasters, and breathing apparatus.

Table 4-30

**DEVELOPMENT CONCEPT 3B
PEAK STORM WATER RUNOFF RATES UNDER
PREDEVELOPMENT AND POST-DEVELOPMENT
CONDITIONS FOR THE 2-YEAR AND
10-YEAR FREQUENCY STORM EVENTS AT
THE CHARLESTON NAVAL BASE**

	2-Year (cfs)	10-Year (cfs)
Predevelopment	1,660	2,870
Postdevelopment	2,120	3,540
Percentage Increase	11%	11%

Key:

cfs = Cubic feet per second.

Source: Department of Agriculture 1986.

4.10.2 Alternative Reuse Scenario 1

This alternative involves a minimal expenditure of capital investment and maximizes the use of existing assets. This alternative would create fewer jobs than would Alternative Reuse Scenario 3 and would therefore create lesser demands on utility services such as water, wastewater treatment, and electricity. In addition, the plan involves minimal new construction. Therefore, no significant increase in storm water runoff would occur.

4.10.3 Alternative Reuse Scenario 2

Under this scenario, the number of jobs created and the degree of redevelopment are less than in Alternative Reuse Scenario 3; therefore, the impact on the existing utility infrastructure would be less than that described for Alternative Reuse Scenario 3.

4.10.4 Cumulative Impacts

At the present time there are no major projects proposed in the Charleston area which would affect the supply and distribution of utilities.

4.10.5 Mitigation Measures

In order to mitigate the effects of increased storm water runoff from the site (i.e., possible degradation of water quality and/or increased flood potential) Alternative Reuse Scenario 3 (including Concepts 3, 3A, and 3B) includes open space/storm water management

areas which would serve to contain most of the storm water generated at the site. However, individual storm water management plans will need to be submitted to the South Carolina Department of Health and Environmental Control, OCRM for approval prior to initiation of any construction projects. After review, the OCRM will issue a Storm Water Management Permit pursuant to the State's Storm Water and Sediment Reduction Act and the requirements of the NPDES General Construction Permit for land disturbances greater than 5 acres in size (Fersner 1994).

All detention ponds will be constructed entirely on the upland sides of the wetland boundaries. In addition, the contours around the storm water detention ponds will be designed to assure that the majority of site runoff will be directed into the ponds. Proper functioning, operation, and maintenance of these detention ponds and drainage swales will provide both water quality and water quantity control, minimizing the potential for stream and wetland degradation. Storm water control detention structures will be constructed based on specifications included in South Carolina Standards for Storm Water Management and Sediment Reduction (South Carolina Code of Regulations 72-300) and in the policies of the City of North Charleston regarding storm water runoff. The inclusion of oil/water separators in future detention ponds would be likely.

4.11 Community Services and Facilities

4.11.1 Alternative Reuse Scenario 3: Development Concept 3

Schools

Implementation of Development Concept 3 over the proposed 20-year timeframe would gradually provide an estimated 9,800 direct jobs in the area, encouraging families to remain in and/or move into the region. The corresponding gradual increase in school enrollment would help to offset Naval Base-affiliated student losses and corresponding state EFA aid losses. Implementation of Development Concept 3 would reduce the net loss in student enrollment due to Base closure from 2,907 to 1,041 students in Charleston County, from 1,674 to 1,350 students in Berkeley County, and from 1,010 to 524 students in Dorchester County School Districts. The distribution of this total among the three school districts was estimated based on existing geographic distribution of civilians that work at Charleston Naval Base (i.e., 69.4% in Charleston County, 12.3% in Berkeley County, and 18.3% in Dorchester County) (Charleston Trident Chamber of Commerce, Center for Business Research 1993). The net decrease in enrollment was calculated by subtracting the

projected increase in enrollment associated with the implementation of Concept 3 from the total decrease in enrollment resulting from Base closure. Using the same assumptions, the predicted net loss of state EFA aid totals approximately \$970,800 (or 2%) for Charleston County, \$1,751,400 (4%) for Berkeley County, and \$654,850 (or 3%) for Dorchester County.

Implementation of Concept 3 would result in positive impacts to Charleston County School District by converting the historically nontaxable Naval Base property into new taxable land in the district. Approximately 1,000 acres of new local revenue-producing land would be created by Concept 3, and would contribute approximately \$130,000 over five years and \$370,000 over 20 years in school taxes to the Charleston County School District. These figures correspond to an average annual allocation of 50% of total local taxes to the Charleston County School District (Hartley 1994).

Day Care/Child Development Facilities

The child development facility (Building 801) located on the Naval Base will continue to provide day care services after Base closure, under the operation and management of the North Charleston Housing Authority. Development Concept 3 includes the provision of child care facilities for a maximum of 147 children. The child care facilities will be operated partly by six local child youth development agencies (see Appendix B).

The two day care facilities located at the Naval Weapons Station will continue to provide child development services to area military personnel after Base closure. Although these facilities are currently operating at maximum capacity with a waiting list, it is anticipated that positions will become available as ships associated with the Base closure leave the area (Arnold 1994). In addition, planned facility expansion will allow capacity for 36 additional military-affiliated children.

Recreational Facilities

Development Concept 3 sets aside numerous areas on the Base for local community recreational use, including the marina, open area, athletic fields, gymnasiums, and swimming pools. In total, almost 30% (420 acres) of the naval base is proposed for recreation and open space, including a 116-acre waterfront park at the northern end of the base more than 57 acres containing playfields, recreation buildings, and a marina, and multiple-use storm water drainage areas.

A major recreation district is proposed adjacent to Cochrane Hall (building 180), which would expand existing and add new public baseball/softball fields, soccer/football

fields, and tennis courts. The adjacent indoor pool (Building 92), auditorium and gymnasium (Building 180) would also serve the North Charleston community at large. In particular, this district is located adjacent to the Chicora and Cherokee Park neighborhoods, and will help to satisfy a defined need for public recreational facilities in these areas. In addition, a 27-acre active recreation/play field area at the Chicora Tank Farm would also contribute needed recreational amenities in this neighborhood.

The existing Indigo Plantation golf course at the north end of the base would be replaced by a waterfront park. The 116-acre waterfront park is intended to serve broad recreational uses by promoting regional tourism at the formal visitation gardens, the old Turnbull Plantation, a proposed conference center, historic Naval exhibits, and large, historic inns.

A marina with a boat launch, boat slips, and coffee shop pavilion would be retained in the southern portion of the base, and would provide access to water recreation on the Cooper River. Bicycle and pedestrian linkages along tree-lined streets are proposed, generally connecting the marina to the south with the recreation district and waterfront park to the north, and from the recreation district to Spruill Avenue and beyond. This would provide pedestrian and bicycle access to the other recreational facilities offered, as well as create a recreational trail system. The open space storm water drainage plan for the base provides opportunities for passive recreation such as picnicking, wildlife observation, and hiking.

The development of the proposed Maritime Cargo Terminal, Intermodal Rail Yard, and Marine Industrial Park in the southern portion of the base would result in the loss of three existing baseball fields, a running track, bowling alley (Building 644), the racquetball and fitness center (Building 670), and six tennis courts.

The fiscal impacts on the City of North Charleston of owning and maintaining the recreational facilities provided in Concept 3 is estimated to be \$53,000 (BEST 1994).

Emergency and Medical Services

Fire Services. Implementation of Development Concept 3, or any of the four alternatives, would result in an expansion of the North Charleston Fire Department's current service area. An optimal service radius for fire company distribution ranges between 1.5 and 2 miles (BEST 1994; Rissanen 1994). In order to maintain this service standard with the addition of the Naval Base property in the service area, at least one additional station would be required. There are three existing fire stations on the base. Only one station, Station No. 1 (located near the Reynolds Avenue gate), is located within a designated community support

district. Stations 2 and 3, although located near areas proposed for the waterfront park and the Intermodal Rail Yard, would not necessarily be incompatible with these uses, since public emergency and reuse services are often located based on optimal service area radius as a primary factor, with surrounding land use as a secondary consideration. However, within 10 to 15 years, the city fire department would be displaced from the proposed Intermodal Rail Yard and port area, when the developer of the Cargo Terminal and its own fire department begins to occupy this district.

Additional funding and personnel would be required to maintain the level of service currently provided. All equipment currently belonging to five stations on Base will be transferred to the City of North Charleston. The increase in cost of providing fire services on the Base is estimated by the City of North Charleston to be \$1,200,000.

At a minimum, utilization of the main Naval Base fire station Number 1 on Reynolds Avenue would allow the city to consolidate forces from their existing Reynold's Avenue station on the Base property and maintain a central location for all surrounding neighborhood and Base responses (Rissanen 1994). Total additional costs to the city would be reduced if only one station was operated rather than three.

The department currently lacks sufficient aerial ladder trucks, equipment for service and repair, and hazardous material response capabilities to adequately accommodate Development Concept 3 (Rissanen 1994). However, all existing equipment will be made available from the existing stock of Naval Base fire department equipment. To maintain the current level of city fire fighting services, one station would be needed and 14 response personnel per station also would be required.

Security Services

The addition of the Naval Base and the Chicora Tank Farm to the North Charleston Police Department service area does not constitute a significant increase in service area. However, the high-intensity of public use proposed, and the corresponding increase in traffic on Base will increase work loads for the city's police officers.

The North Charleston Police Department currently operates with a total of 173 officers throughout the city; approximately the same number of Navy security officers currently patrol the base. Assuming an average of 11,600 people are present daily on base, the city would need to reallocate resources or hire approximately 10 to 14 more city police officers. In May 1994, the City of North Charleston received a federal grant of approximately \$900,000 to hire an additional 10 police officers in anticipation of the need for additional services as the Base closes. City responsibility for security would be reduced in the southern

portion of the Base if the developer of the Cargo Terminal provides its own security personnel in the Cargo Terminal, Intermodal Rail Yard, and Marine Industrial Park.

Naval security services will continue to be provided until the property is transferred. During this period, the Security Department will gradually reduce the security force as the number of Naval and civilian personnel present on Base is reduced. However, the level of security provided will always correspond to that needed on base, as determined through continuous monitoring performed by the Navy security department. At no time will the reduction of the security force affect the personal security of those remaining on Base (Massey 1994). For example, if privatization of the shipyard occurs before Base closure is complete, the department will shift the geographic concentration of personnel to increase security to active housing areas and other sensitive areas.

Reuse of the existing security buildings and equipment for multi-jurisdictional law enforcement activities as requested by the City of North Charleston and State of South Carolina would enhance the security on base. Even if the current ratio of 2.4 city officers to every 1,000 in population is not increased, the mere presence of other jurisdictions of law enforcement personnel may be outwardly visible, and result in fewer security calls in the vicinity. Implementation of Development Concept 3 would cost an estimated \$1,170,000 for the provision of North Charleston security services on the Base. (This assumes that the terminal developer will provide security in the portions it operates) (BEST 1994).

Human/Community Service Providers

Development Concept 3 accommodates for the long-term requests under the McKinney Act in three of the proposed reuse districts (see Appendix B). The two Community Support Districts proposed in this plan, located in the northern and central portions of the base, would provide office, warehouse, and training space for the homeless and human service providers. This 395,000 square feet of renovated space on a total of 61 acres would be shared with the City of North Charleston community support activities. In addition, the 27-acre Housing District located adjacent to the Community Support District contains Naval Complex housing which would be used to address the needs of homeless citizens, human services providers, and North Charleston housing programs.

There are some areas of potential conflict between Concept 3 and the buildings requested pursuant to the McKinney Act. Not all of the McKinney Act Task Force's requests can be accommodated on a long-term basis under Concept 3. As stated in Section 4.11.5, one of the intents of the task force is to obtain the use of properties in the southern portion of the base. However, the proposed development of the Marine Cargo Terminal, Intermodal

Rail Yard; and Marine Industrial Park require extensive utilization of acres in the southern portion of the base, which conflicts with McKinney Task Force requests for congregate housing, the medical facility, an integrated service facility, and food service training facility. The Marine Industrial Park is seen as essential to the development of the proposed port terminal because it will provide needed job creation and tax revenue to the City of North Charleston. Since the Phase I redevelopment concept anticipates these districts to be constructed within the first 10 years, some local community service providers would have to be relocated to other acceptable facilities, depending on the exact design of these districts.

In addition, the duplex housing units requested by McKinney Act agencies are situated within the proposed waterfront park. The reuse plan states that the community would relocate these facilities and/or tenants to the designated housing district further to the west within the Naval complex.

The method of property conveyance, timeframe for short-term property use, and specific ownership or rental conditions for McKinney Act agencies are undecided. However, on May 26, 1994, a resolution was passed by the BEST Committee that assured that the best possible method of conveyance would be collectively determined by BEST (or its successor, the "Community") and the McKinney Act Task Force, to ensure that the needs of the homeless provider organizations, and the long-term economic needs of the community are met. In addition, the resolution stated that BEST (or its successor, the Redevelopment Authority) and the Task Force would collectively negotiate with the applicable federal agencies, including HHS (Health and Human Services), HUD (Housing and Urban Development), DoD, and the Secretary of the Navy to ensure property conveyance that meets all needs (Ray Huff Architects 1994).

As with the community service providers identified above, the National Civilian Community Corp would also be required to relocate from its current facilities in Building 61 and Building 676.

4.11.1.1 Alternative Reuse Scenario 3: Development Concept 3A

Development Concept 3A would result in similar beneficial and adverse impacts to the provision of community services including schools, day care/child development, recreational facilities, emergency and security services as would Development Concept 3. In addition, local community service organizations would also benefit via the McKinney Act process and NCCC program.

4.11.1.2 Alternative Reuse Scenario 3B: Development Scenario 3B

Schools

Development Concept 3B would provide an estimated 2,000 to 12,344 direct jobs in the area. It is assumed that some of these people would relocate to the Charleston Area and bring their families, offsetting the loss of Naval Base-affiliated students and corresponding EFA aid losses. Assuming a maximum buildout and resultant employment creation, implementation of Concept 3B would reduce the net loss in student enrollment due to Base closure from 2,907 to 543 students in Charleston County, from 1,674 to 1,182 in Berkeley County, and from 1,010 to 341 in Dorchester County School Districts. Under these conditions the predicted net loss of state EFA aid from existing levels would equal \$506,619 in Charleston County, \$1,538,054 in Berkeley County, and \$426,250 in Dorchester County.

By converting nontaxable Navy Base property to new taxable land uses, Concept 3B generates an estimated maximum of \$392,600 in tax revenues. This would contribute \$196,300 in school taxes to the Charleston County School District.

Day Care/Child Development Facilities

No significant impact to these facilities would result from implementation of Concept 3B. Impacts would be similar to Development Concept 3.

Recreational Facilities

The development of recreational facilities on the northern and western portion of the property in Concept 3B would be similar to Development Concept 3. The predominance of open space on the southern portion of the property would provide additional passive recreation facilities. No significant impact to recreational facilities would result from this plan.

Emergency and Medical Services

Impacts from Concept 3B on emergency and medical services would be similar to Concepts 3 and 3A.

Security Services

Impacts from Concept 3B on security services would be similar to Development Concepts 3 and 3A.

Human/Community Service Providers

Development Concept 3B would maintain community support districts providing office, warehousing, and training space for the homeless and human service providers in the northern and central portions of the base as proposed under Concepts 3 and 3A. This area would provide 395,000 square feet of renovated space, similar to Concepts 3 and 3A.

However, an additional 183,060 square feet of space to the west of the State Department would be available for the long-term in this scenario because Concept 3B does not include the Maritime Cargo Terminal and its associated facilities which would have necessitated the relocation of these facilities at some time in the future. McKinney Act requests for the 168,360 square feet in Building 61 for an integrated services center, and the 14,700 square feet in Building NS71 for food service facility/job training, would not be affected in Concept 3B. Other requests for available space would be relocated to the northern and western portions of the property due to demolition of older, structurally deficient buildings and incompatibility of requested land use with the reuse scenario. In general, residential uses are incompatible with maritime industrial uses; however, nonresidential uses (training, administrative space) could remain in the southern part of the Base.

4.11.2 Alternative Reuse Scenario 1

Schools

Alternative Reuse Scenario 1 would create the fewest new jobs of all plans considered (1,900 to 9,870). Accordingly, it would have the least effect of offsetting student enrollment losses resulting from Base closure in Charleston area school districts. If the maximum projected number of jobs was created, the net student enrollment decrease (student enrollment loss resulting from Base closure, offset by projected student enrollment gain resulting from job creation) would be about 1,300 in Charleston County, 1,400 in Berkeley County, and 625 in Dorchester County school districts. The corresponding loss of state aid would be \$1,320,000, \$1,630,000, and \$783,000 for Charleston, Berkeley, and Dorchester county school district, respectively. The plan would create about 750 acres of revenue-producing land that would generate approximately \$210,000 annually in school taxes in Charleston County (at full buildout).

Day Care/Child Development Facilities

The impact associated with Alternative Reuse Scenario 1 would be similar to that described for Development Concept 3.

Recreational Facilities

Alternative Reuse Scenario 1 illustrates opportunistic reuse of the Base's existing recreational facilities for the local neighborhoods and the City of North Charleston. Active recreation use focuses on immediate reuse of recreational facilities by calling for minimal reconfiguration, relocation, and reconstruction of existing facilities. A total of 250 acres would be contributed to recreational use, including most of the existing buildings and all playing fields. In addition, this is the only alternative that would retain the golf course in the northern portion of the base. The fiscal impact to the City of North Charleston of owning and maintaining recreational facilities provided on the Base is estimated to be approximately the same for this scenario as for Development Concept 3.

Fire

The City of North Charleston Fire Department would need to utilize one new fire station on base, and could use existing Station No. 1.

Security Services

Alternative Reuse Scenario 1 would create 1,900 to 9,870 jobs, which would necessitate an additional 10 officers. However, a large expanse of unutilized land in this alternative would require some increase in patrol activities. The estimated annual cost to the police department to implement this plan would be about \$1,000,000.

Human/Community Service Providers

Alternative Reuse Scenario 1, provides the greatest potential for use by the NCCC and McKinney Act Task Force agencies, compared to all plans presented. With limited infrastructure improvement and redevelopment, existing facilities would be in lower demand by business and industrial interests. Therefore, displacement of human service agencies by tax and revenue-generating activities would be reduced.

4.11.3 Alternative Reuse Scenario 2

Schools

The job capacity potential under Alternative Reuse Scenario 2 ranges from 2,000 to 11,325 jobs, although the upper range of this estimate is based on capacity rather than likely demand for jobs. Under this plan, the net student loss (student enrollment loss resulting from Base closure, offset by projected student enrollment gains resulting from job creation) would be about 1,400 in Charleston County, 1,300 in Berkeley County, and 550 in Dorchester County school districts. The corresponding loss of state EFA aid would be about \$1,400,000 in Charleston County, \$1,500,000 in Berkeley County, and \$600,000 in Dorchester County.

This plan would create 800 acres of revenue-producing land, that would generate approximately \$250,000 annually in Charleston County school taxes (after full buildout).

Day Care/Child Development Facilities

The impact associated with Alternative Reuse Scenario 2 would be similar to that described for the preferred plan.

Recreational Facilities

Alternative Reuse Scenario 2 would provide 660 acres for recreation and open space uses, the largest contribution of all plans considered. A 248-acre area containing a regional park, active recreation fields, and expanded marina in the southern portion of the Base allows continued use and expansion of the base's existing recreational facilities that would be eliminated by the preferred plan. All other recreational facilities provided in this alternative are similar to those of Development Concept 3.

The fiscal impact to the City of North Charleston of owning and maintaining recreational facilities provided on the Base is estimated to be the same for this scenario as for Development Concept 3.

Fire

The City of North Charleston Fire Department would need to utilize existing station No. 1 to continue current levels of fire protection.

Security Services

Although Alternative Reuse Scenario 2 proposes a lower job creation potential than Development Concept 3, about 10 to 14 additional security personnel would be needed to maintain the current standard of service. However, the estimated annual cost to the North Charleston Police Department is higher for this alternative, than the other plans addressed. The estimated \$1,925,000 cost is based on the maximum job creation potential and the large amount of open space in the form of regional and cultural parks and the associated increase in potential incidents and required patrol activities.

Human/Community Service Providers

In Alternative Reuse Scenario 2, community support and housing districts in the northern part of the Base accommodate human service agencies similar to Development Concept 3. In addition, the regional park proposed in the southern portion of the Base displaces temporary agency use in this area, similar to the displacement by the Marine Industrial Park and rail yard uses proposed in the Preferred Development Plan. Alternative Reuse Scenario 2 may restrict the potential for reuse or lease of existing structures by NCCC and the McKinney Act Task Force Agency.

4.11.4 Cumulative Impacts

Schools

As stated in Section 3.11.1, future Federal Impact Aid payments may be eliminated for all "B" students by Congress, based on pending legislation. This loss due to policy change would constitute a significant portion of the total Impact Aid received by each district. If the legislation was approved and implemented within the next few years, the Impact Aid losses that would be directly attributable to Naval Base closure would be for the decline in enrollment of "A" students only and would be reduced to \$279,705, \$0, and \$0 for Charleston, Berkeley, and Dorchester District Two County School Districts, respectively.

4.11.5 Mitigation Measures

Schools

Mitigation for impacts to community services would focus primarily on mitigating the fiscal impact to the City of North Charleston of implementing Base redevelopment. The fiscal

impact (loss of federal and state aid) resulting from student enrollment loss in Charleston, Berkeley, and Dorchester Counties would not be mitigated by replacement of aid or grants from the government. However, operational impact within school districts can be mitigated through redistricting, or reallocating children from schools operating above capacity to schools where student enrollment losses are greater.

Recreational Facilities

The cost of recreational land and facility ownership transfers from the Navy to the City of North Charleston and Charleston County can be mitigated through the Federal Lands-to-Parks Program, administered by the U.S. National Park Service. Under Section 203(k)(2) of the Federal Property and Administrative Services Act of 1949, federal real properties which have been determined to be surplus to the needs of the federal government may be conveyed to state and local governments for parks and recreational purposes. This program facilitates the transfer of property at no cost to the receiving entity, provided that the land is dedicated in perpetuity for public park and recreation purposes. In addition, grants for park creation and maintenance are available from the Land and Water Conservation Fund (U.S. Department of the Interior, National Park Service) and the State of South Carolina (Division of Recreation, Department of Parks, Recreation and Tourism) (Huie 1994).

Emergency and Medical Services

Fiscal impacts would be incurred by the addition of the Naval Base to the City of North Charleston Fire and Police Departments. However, charitable transfer of Navy-owned security and fire-fighting facilities and equipment needed by the city would help to offset the fiscal impact resulting from implementation of Alternative Reuse Scenario 3.

4.12 Cultural Resources

4.12.1 Archaeological Resources

An archaeological investigation undertaken at the Charleston Naval Base has identified a prehistoric site (38CH1496) which has been determined to meet NRHP eligibility criteria (Tippet 1993). This site is located in the vicinity of Quarters L in the officers housing area. Regardless of which alternative reuse scenario is implemented, any ground disturbing operations at the location of the site would need to be preceded by additional archaeological investigation and/or concurrence from the SCDAH in accordance with the requirements of the Memorandum of Agreement (MOA) between the Navy and SCDAH (see Appendix G).

Protective covenants placed on these properties prior to the transfer of ownership will ensure that the MOA will be followed.

The remaining portion of the facility underwent severe subsurface disturbance which either destroyed archaeological deposits or rendered them not eligible for the NRHP because of the loss of integrity. Consequently, the proposed reuse scenarios would not affect significant subsurface cultural resources.

4.12.2 Architectural Resources

Architectural resources of the Charleston Naval Base consist of three NRHP-eligible historic districts and three individually eligible structures, totaling 116 structures (see Appendix G). The future use and maintenance of these resources is specified in the MOA. Protective covenants placed on these properties prior to the transfer of ownership will ensure that the MOA will be followed.

4.13 Environmental Contamination

4.13.1 Alternative Reuse Scenario 3: Development Concept 3

The Navy has identified 195 SWMUs and 204 AOCs to date under its restoration action program. Many of these sites are potentially contaminated and may require remediation of soils and/or groundwater. Some of the sites have the potential to interfere with specific elements of Development Concept 3, potentially causing the development of those specific plan elements to be modified. Figure 3-17 illustrates Development Concept 3 in relation to the RFA/RFI zones. Based on a review of all SWMUs and AOCs, and on discussions with Navy, USEPA, and SCDHEC personnel and on existing information, it was determined that certain SWMUs and AOCs have greater potential to impact the implementation of Concept 3. Specific impacts on implementation of Development Concept 3 may only be addressed after the RFI field work conducted as part of the corrective measures study has been completed. Those SWMUs and AOCs which have the greatest potential to pose complications to implementing this conceptual reuse plan have been identified on Figure 4-8 and are described below according to the development zone that each may affect.

Marine Cargo Terminal

The proposed Marine Cargo Terminal area overlaps portions of RFA/RFI zones G, H, and I. SWMU 7, which encompasses the base's PCB transformer storage yard, lies near the western end of the proposed cargo laydown area (see Figure 4-8). RFI activities and

remediation, if warranted, will be complete at SWMU 7 prior to complete build out of the terminal (15 to 20 years).

Two areas of unexploded ordnance will require investigation and clearance prior to initiation of terminal development activity. Two loaded depth bombs were reportedly dropped near shore on the north side of Pier T in January 1945 (AOC 500), and two loaded depth bombs were dropped in November 1943 inshore of the primary ship channel off the end of the groin located south of Pier X (AOC 501).

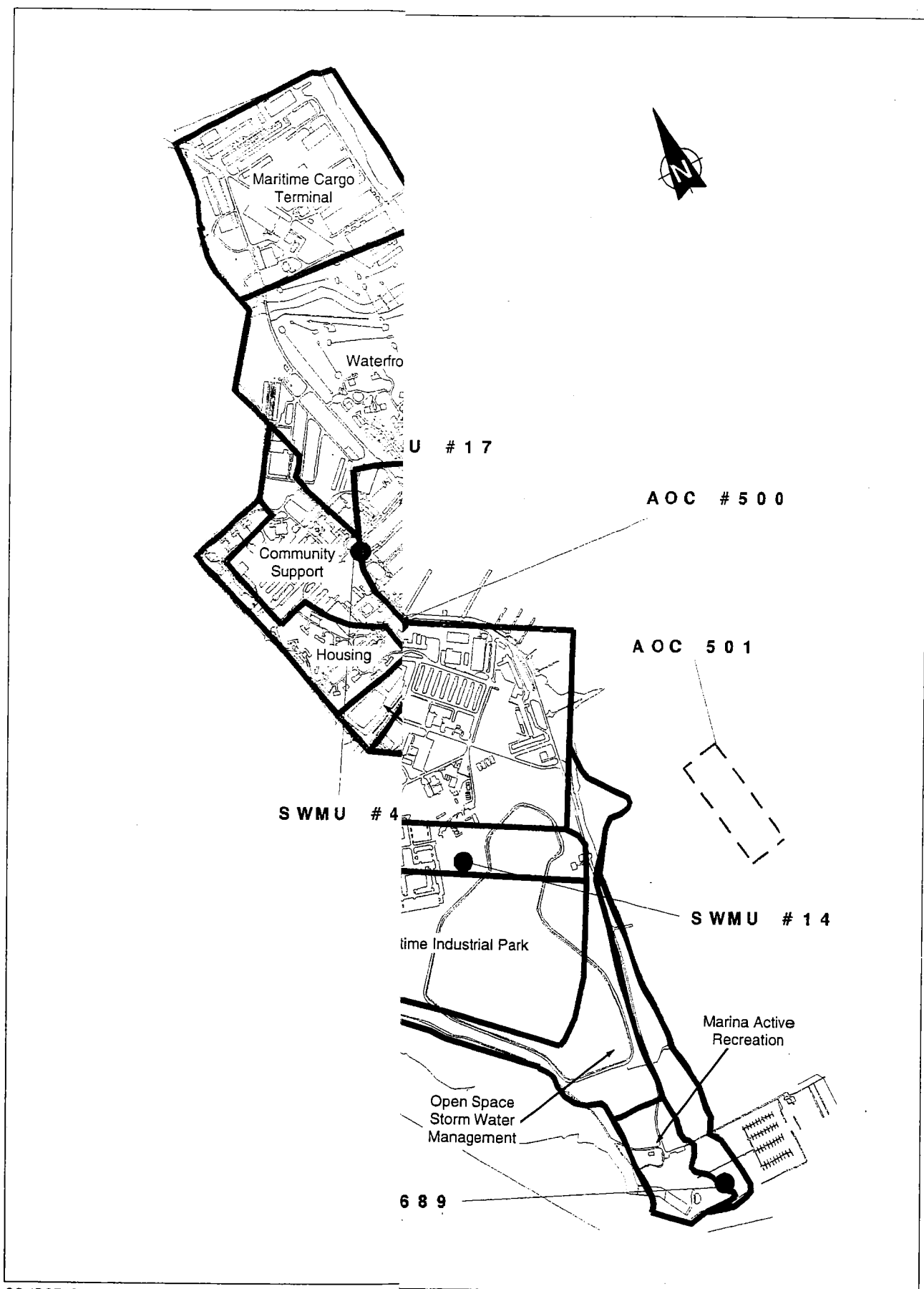
The southern transportation corridor proposed to connect the Intermodal Rail Yard with primary off-Base rail and truck arteries is currently envisioned to cross Shipyard Creek, entering the base property at the dredge material area at the southern end of the property. The dredge material area AOC 690, is currently scheduled to undergo confirmatory sampling for suspected contamination to support future property transfer.

The proposed transportation corridor would traverse off-Base industrial properties that are privately owned and operated. Table E-8 in Appendix E presents a list of adjacent properties with known or suspected releases of regulated wastes or substances. Nearby properties, according to an EDI DataBase search, include CERCLA sites, leaking UST sites, and hazardous waste generators. Given the industrial nature of the commercial activities along and near Shipyard Creek, it is possible that the southern transportation corridor, as proposed, may traverse a regulated waste site or currently unconfirmed contamination. Should this be the case, the alignment of this corridor will need to be modified if its construction would interfere with characterization or remediation activities at a contaminated site.

Marine Industrial Park

The Marine Industrial Park, as proposed, overlays portions of RFA/RFI zones H and I. Sites that would interfere with development of the Marine Industrial Park include SWMU 9 (closed landfill), SWMU 14 (chemical disposal area), and AOC 503 (unexploded ordnance) (see Figure 4-8).

The closed landfill has been given a high priority under the base's RFA/RFI program, with the immediate goals of defining the lateral extent of buried solid waste and characterizing the nature and extent of groundwater contamination. Given the regulatory requirement for 30 years of post-closure groundwater sampling and analysis and recognizing that typical solid waste landfill remedial measures (i.e., excavation of waste, construction of slurry walls and/or interception trenches) often require intensive site modifications, SWMU 9 would likely have a significant impact on development of the northwest tip of the Marine Industrial Park.



SOURCE: Department of the Navy, April 19, 1994; BEST 1994.

Figure 4-8 SELECTED HAZARDOUS WASTE SITES AT CHARLESTON NAVAL BASE WITH OVERLYING DEVELOPMENT CONCEPT 3

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Conceivably, once lateral extents of buried waste are known, SWMU 9 may have an impact on development of the Intermodal Rail Yard which is part of the Marine Cargo Terminal.

SWMU 14, the old chemical disposal area, is located east of buildings 676 and 677 in RFA/RFI Zone H. This was an area used for subsurface disposal of chemical wastes. Its location may impact the eastern end of the Marine Industrial Park, and the Intermodal Rail Yard.

AOC 503 encompasses the approximate location of two unexploded depth bombs south of building 665. This area will need to be investigated and cleared prior to any construction activity in the central portion of the park.

Marina

Development and future public use of the marina, at the southern tip of the base, may be impacted by AOC 689, which is a small site suspected of containing dioxin contamination. The dredge material area may also have an impact on marina development.

Northern Marine Cargo Terminal

This smaller Cargo Terminal, located at the northern tip of the property, can be developed as envisioned in Development Concept 3. Contaminated areas exist in this zone, but the ongoing RFI activities should accommodate the development schedule without impact.

Cultural Park

Environmental contamination would not impact development of the Cultural Park.

Office District

The Office District overlaps portions of RFA/RFI zones B, C, D, and F (see Figure 4-8). Included in this district is SWMU 47, the old burning dump, which is located in the vicinity of buildings NSC66 and NSC67. Further investigation of this SWMU would be completed prior to initiating construction activities in the area. A number of other SWMUs, AOCs, USTs, and ASTs exist in this district, and many of the existing buildings contain asbestos and may contain lead paint. None of these issues are expected to impact the development of this district.

Community Support/Housing

SWMU 38 and several AOCs exist in this area, but none are expected to impact redevelopment. Many of the buildings in this area are planned to be used as housing. Asbestos is present in many of the buildings, and lead-based paint is suspected to exist in most of the buildings however these will be remediated/abated in accordance with federal regulations in effect at the time of transfer.

Community Support

This area would be reused largely for recreational purposes. Redevelopment would not be impacted by environmental contamination. The Chicora Tank Farm is intended to be converted into athletic fields. This portion of Development Concept 3 may be delayed until documented contamination at the site is remediated and the underground tanks are cleaned and closed in place.

Shipyard

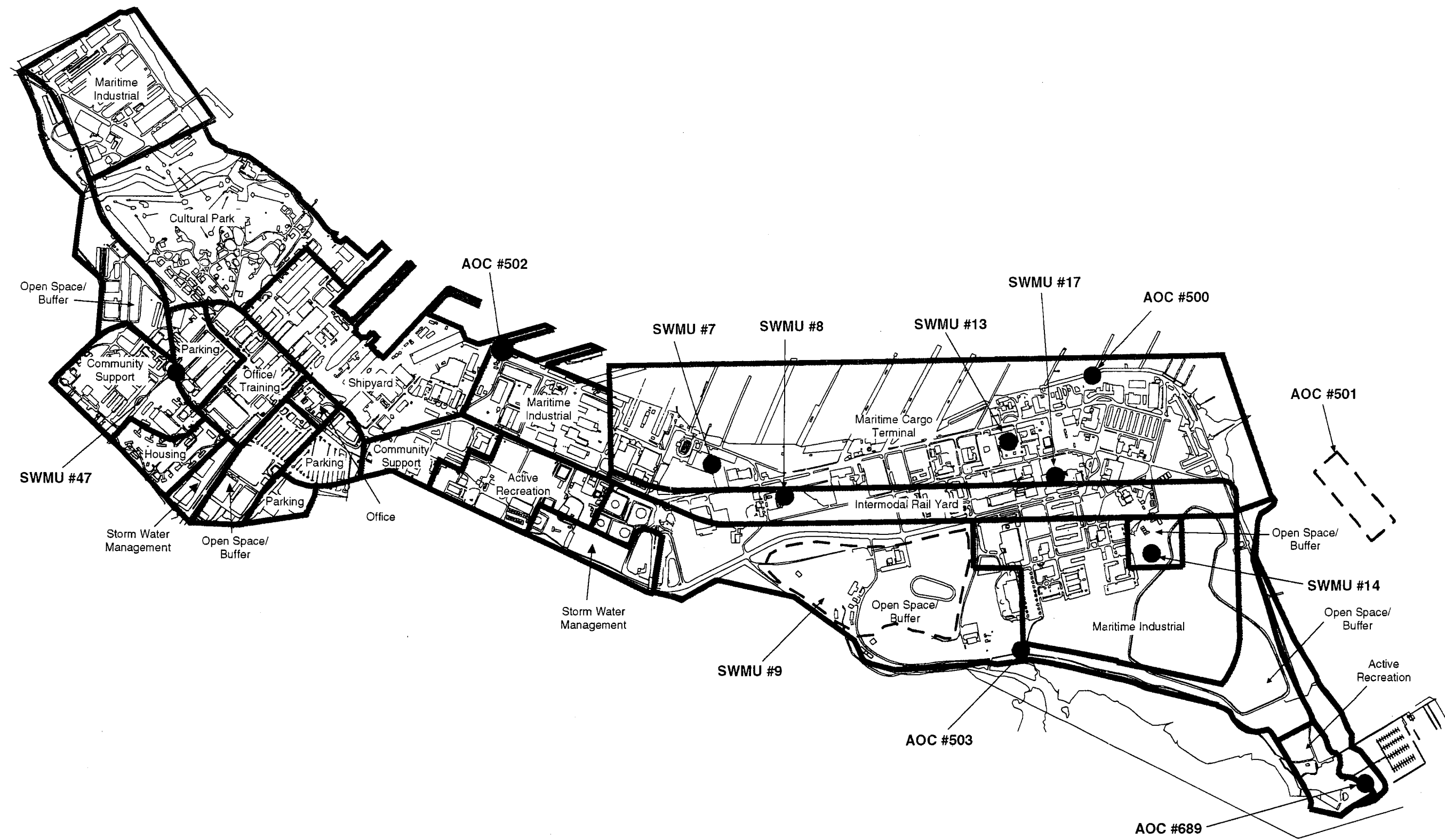
The shipyard is anticipated to undergo a "hot turnover" to a new owner using an interim lease arrangement, and environmental contamination is not expected to have a significant impact on that lease arrangement. Investigation and remediation of contaminated areas will continue for some time in the shipyard area under the Navy's guidance. Conversely, "hot turnover" will not delay investigation and cleanup.

Marine Industrial District

Development of the Marine Industrial District would largely center around the privatization of existing shops that support shipyard activities. Environmental contamination issues are not expected to hinder progress in this area. A number of SWMUs and AOCs will be addressed through the RFA/RFI program prior to property transfer. AOC 502 is an unexploded ordnance site between piers G and H, where three 5-inch shells were dropped in September 1944.

4.13.1.1 Alternative Reuse Scenario 3: Development Concept 3A

Figure 4-9 illustrates the Development Concept 3A overlay onto the RFA/RFI Zones which have been established at the Naval Base Charleston. The impact of environmental contamination on implementing Development Concept 3 is the same as discussed above for all functional areas with the exception of the Cargo Terminal Area, the Intermodal Rail Yard,



SOURCE: Department of the Navy, April 19, 1994; BEST 1994.

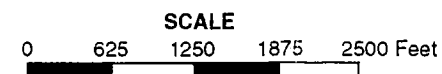
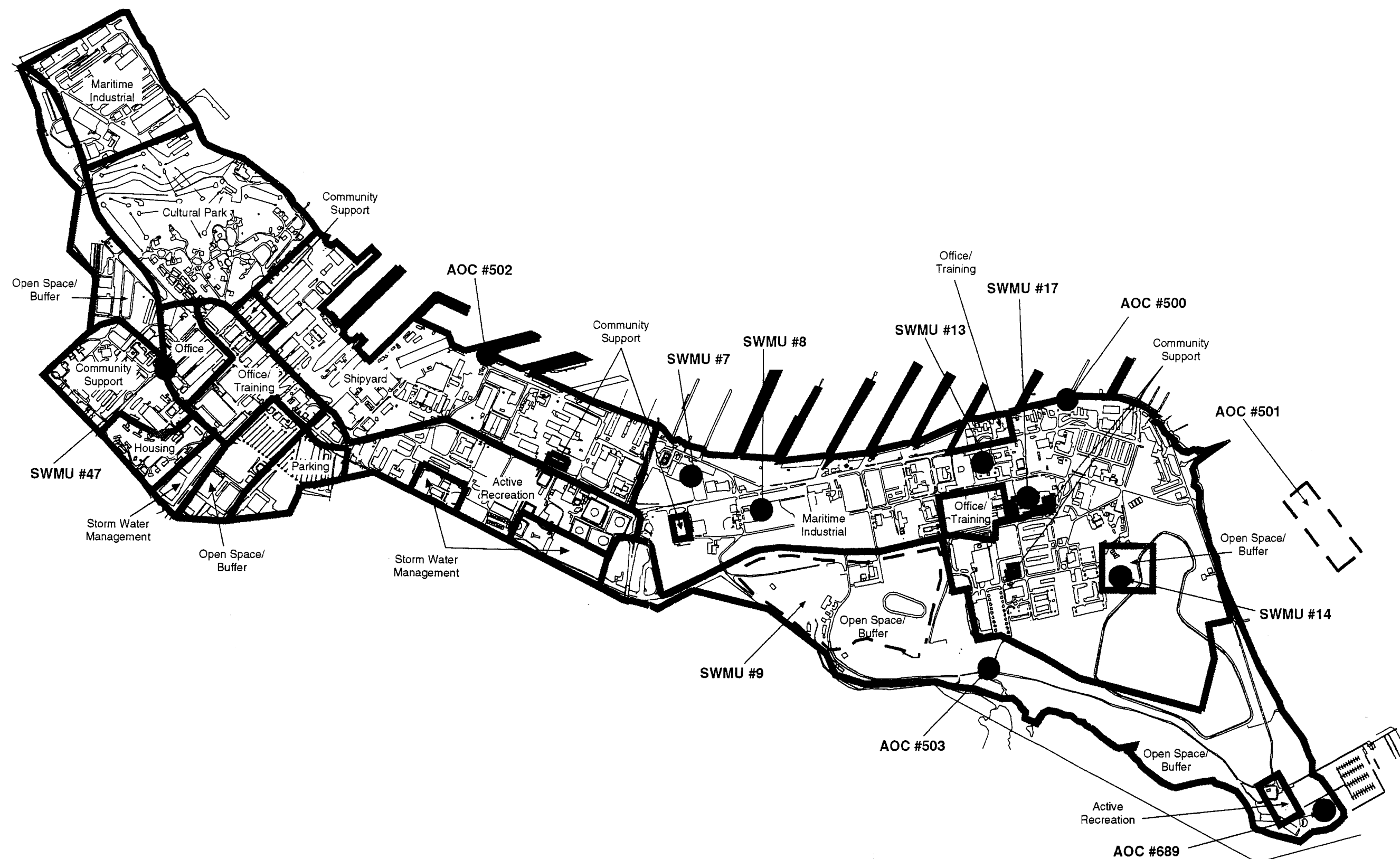


Figure 4-9 SELECTED HAZARDOUS WASTE SITES AT CHARLESTON NAVAL BASE WITH OVERLYING DEVELOPMENT CONCEPT 3A

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SOURCE: Department of the Navy, April 19, 1994; BEST 1994.

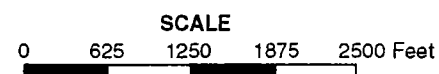


Figure 4-9A SELECTED HAZARDOUS WASTE SITES
AT CHARLESTON NAVAL BASE WITH
OVERLYING DEVELOPMENT CONCEPT 3B

and the Marine Industrial Park. These areas have been reconfigured in this plan so as to avoid SWMU 9 and SWMU 14, which have been identified as potentially influencing redevelopment efforts due to the likely use of a RCRA cap and long-term monitoring as the remedial method (thus precluding intensive development). However, other developments could be permitted within the constraints of remedial action and based on approval of EPA/SCDHE-C). SWMU 7, SWMU 8, SWMU 13, SWMU 17, AOC 503, and AOC 500 will be remediated per all applicable federal and state regulations prior to transfer so that they will not affect development of these facilities (as will all SWMUs and AOCs on the property).

In avoiding SWMU 9 and SWMU 14, Development Concept 3A also would avoid any time delays and additional engineering/design costs that may be associated with the selected corrective measure. This would allow for the redevelopment of the south end of the Base on a more timely and cost-effective basis than would implementation of Development Concept 3.

4.13.1.2 Alternative Reuse Scenario 3: Development Concept 3B

As with Development Concept 3A, Concept 3B avoids development on SWMUs 9 and 14 (see Figure 4-9A). This avoidance of these contaminated areas on the southern end of the Base would allow development in a more timely and cost-effective manner than Development Concept 3.

Land uses under Development Concept 3B, particularly those related to shipbuilding and other maritime industrial uses, involve a number of operations that generate waste and other potentially hazardous materials. Waste-producing operations and waste descriptions associated with these activities would include:

- General operations resulting in generation of leftover raw materials (e.g., bags, metal, drums) with residual deposits;
- Spray painting and resin application resulting in generation of waste paints, thinners, degreasers, solvents, resins and gelcoat, and VOC emissions;
- Grit blasting and chemical stripping resulting in generation of wastewater-containing blasting media, organic paint sludge, heavy metals, stripping chemicals, and VOC emissions;
- Engine repair resulting in generation of waste turbine oil, lubricants, degreasers, mild acids, batteries, carburetor cleaners, VOC emissions;

- Electroplating/metal finishing operations resulting in generation of cyanide solutions, heavy metal sludge, corrosive acid, and alkali solutions;
- Machine shops resulting in generation of spent cuttings and lube oils, scrap metal, degreasers, and VOC emissions;
- Equipment cleaning and area washdown, resulting in generation of wastewater containing paints, solvents oils, and degreasers;
- Degreasing, equipment cleaning, chemical paint stripping, and reinforced plastic fabrication resulting in generation of resin and paint contaminated solvents and VOC emissions; and
- Vessel bilge cleaning, resulting in generation of bilge waste (oily water) (USEPA 1991).

4.13.2 Alternative Reuse Scenario 1

Environmental contamination would not significantly impact the implementation of this alternative. The Navy's corrective action program would be able to proceed essentially unhindered by development activity.

4.13.3 Alternative Reuse Scenario 2

Substantial improvements to roads, railways, buildings, and utilities are essential to this alternative. Development activity planned for the northern half of the property (RFI zones A-F) would be impacted in a manner similar to that described for Development Concepts 3A and 3B. The southern portion of the property would not be developed into a Marine Cargo Terminal under this scenario, so the SWMUs and AOCs (old landfill, chemical dump, etc.) in this area would not impact development plans particularly if the recreational areas could be developed on top of the caps for SWMU 9 and SWMU 14. AOC 689, which is a potentially dioxin-contaminated area at the southern tip of the Base, may impact the transfer of the marina.

4.13.4 Cumulative Impacts

Implementation of Alternative Reuse Scenario 3 would result in a long-term positive environmental impact on the base property and facilities. The Navy's RFA/RFI program has been greatly accelerated due to the BRAC decision to close the base, so contaminated areas will be addressed much sooner than would be the case under normal operating conditions.

CERCLA Section 120(h)(3)(B)(i) requires that deeds for federal transfer of previously-contaminated properties contain a covenant that all remedial actions necessary to protect human health and the environment have been taken. The 1992 CERFA Amendment to CERCLA provided clarification to the phrase "have been taken." This clarification states that the remedial action has been taken if the construction and installation of an approved remedial design has been completed, and the remedy has been demonstrated to the Administrator (EPA) to be operating properly and successfully. It further states that the carrying out of long-term pumping and treating, or operation and maintenance, after the remedy has been demonstrated to the Administrator to be operating properly and successfully, does not preclude the transfer of the property. This deed requirement applies only to property on which a hazardous substance was stored for one year or more or was known to have been released or disposed. Thus, any remedial and/or removal response action must be selected and implemented for such contaminated properties before transfers to private parties can occur.

The nature and intent of deed restrictions, if any, will depend on the results of the RCRA Facility Investigation (RFI) and Corrective Measures Studies (CMSs), which are currently being undertaken.

4.13.5 Mitigation Measures

Pursuant to the Federal Facilities Compliance Act (FFCA) and outstanding Compliance Agreements with EPA and SCDHEC, the Navy is required to comply with all applicable environmental regulations. In addition, the Navy is required to ensure that environmental impacts associated with past and present activities at the Charleston Naval Base are thoroughly investigated and remediated as necessary (Ensafe/Allen & Hoshall 1994).

Prior to the announcement of the Base Closure and Realignment Act (commonly referred to as BRAC), the Installation Restoration Program was in the early stages of a RCRA Facility Investigation (RFI) to identify and characterize environmental contamination. The Base closure announcement has caused the installation restoration strategy to focus on expediting the RFI and accelerating remediation to facilitate property disposal. All investigations and subsequent remedial activities are being conducted under the RCRA process (U.S. Department of the Navy 1994a).

The Navy is in the process of investigating 195 SWMUs and 204 AOCs under its RFA/RFI program. Meetings will be held to discuss remedies early in the RFI process to ensure the RFI data gathering focuses on appropriate types of remedies. A comprehensive RFI workplan has been prepared for the SWMUs and AOCs and was approved by EPA. The

RFI strategy involves prioritization of the 12 RCRA investigation zones based on actual or potential for reuse. Zone-specific workplans are being prepared and submitted to EPA. Four investigative field teams will be used so that several zones can be investigated simultaneously (Hunt 1994). The following order of zone priority for the RFI has been established but is subject to modifications partially depending upon those areas or priorities as indicated by the Redevelopment Authority:

- 1st: Zones H, I, and C
- 2nd: Zone J, L, and E
- 3rd: Zones A and B
- 4th: Zones D, F, K, and G

Zone priorities have been set in response to estimated potentials for reuse. The current priorities may change as the community reuse plans are finalized and implemented.

The RFI process for the entire property is scheduled to be completed in mid-1997 (Hunt 1994). The RFI will identify the source and nature of contaminants and the rate and extent of their migration through the environment. Concurrently, a risk assessment (RA) is being conducted to determine the risk that the contaminants pose to human health and the environment. A CMS will also be completed to evaluate various potential corrective measures (cleanup methods) and identify a few which offer the best potential for the hazardous waste sites at the Base. Upon completion of the RFI, RA, and CMS, a public meeting will be held to discuss the results of the RFI, RA, and CMS and to obtain public input on the various proposed corrective measures. EPA will consider the public's input and select the corrective measure to be used at each hazardous waste site.

The Navy will remediate all known hazardous waste sites pursuant to applicable state and federal regulations and agreements (Hunt 1994). Cleanup of contaminated areas may delay or complicate specific elements of the Base reuse plan (i.e., location of individual buildings or roadways). These delays should not be significant given the 20- to 30-year implementation schedule for Base reuse. Several sites have been identified for early actions: multiple unexploded ordnance sites, SWMU 2-DRMO lead contamination in Zone A, SWMU 6-Old Public Works Department Storage Area, and several UST sites (U.S. Department of the Navy 1994).

The satellite hazardous waste accumulation areas will be closed as areas of the Base shut down. These areas have been listed as SWMUs in Table E-1 in Appendix E. These

areas will be closed as soon as they are not required; early removal actions or activities to reach a finding of no further action will be conducted immediately following closure (U.S. Department of the Navy 1994).

The following provides a summary of ongoing remediation/mitigation efforts.

4.13.5.1 Underground Storage Tanks

All regulated and unregulated USTs will be screened for transfer or removal, and the Navy will remediate any contaminated soil and groundwater associated with them (U.S. Department of the Navy 1994). The UST program will include tank closures, initial site characterizations, site investigations, remedial action plan preparation, and remedial action plan implementation. UST activities planned in fiscal years (FY) 1994 and 1995 include continued monitoring of Tank 647 at State Department property, the removal of 12 USTs from CNSY, and the removal of 28 USTs from Naval Station property.

A base-wide strategy will be used to coordinate remedial actions being conducted by the IRP and the UST programs. Any groundwater contamination that can be determined to be originating from a specific leaking UST will be remediated under existing SCDHEC UST regulations. If groundwater contamination results from both USTs and IRP sites, the groundwater remediation will be included in the IRP (U.S. Department of the Navy 1994).

As a result of the EBS, the Navy has discovered numerous regulated unregistered USTs which have been reported to the SCDHEC by CNSY Environmental Division personnel. In addition, several fuel oil USTs associated with housing areas exist which do not require registration (U.S. Department of the Navy 1994).

4.13.5.2 Asbestos

DoD policy with regard to asbestos-containing material (ACM) is to manage ACM in a manner protective of human health and the environment and to comply with all applicable federal, state, and local laws and regulations governing ACM hazards. Therefore, unless it is determined by competent authority that the ACM in the property does pose a threat to human health at the time of transfer, all property containing ACM will be conveyed, leased, or otherwise disposed of through the BRAC process.

ACM shall be remediated prior to property disposal if it is of a type and condition which is not in compliance with applicable laws, regulations, and standards, or if it poses a threat to human health at the time of transfer of the property. The remediation discussed above will not be required when the buildings are scheduled for demolition by the transferee and the transfer document prohibits occupation of the buildings prior to the demolition; and

the transferee assumes responsibility for the management of any ACM in accordance with applicable laws.

Numerous buildings exist on Base which contain friable, accessible damaged asbestos. An active asbestos hazard abatement program is in place to abate or remove friable asbestos that is damaged and accessible to working personnel. These areas will be identified through the EBS and plans to abate or remove the asbestos will be developed as necessary. Asbestos abatement, where required, will be an early action to be completed before operational closure.

Friable, damaged and accessible ACM will be abated, and removed ACM waste will be disposed of in an approved landfill. The selected contractor will abate or remove the friable ACM using appropriate methods such that there are no residual airborne asbestos fibers in concentrations which exceed the National Emission Standards for Hazardous Air Pollutants (NESHAPs) or state health standards. The remaining nonfriable ACM will be identified in a disclosure and management plan which will be filed with SCDHEC. This plan will summarize available information on the location, condition, quantity, type, and percent asbestos of remaining ACM and will serve as an operations and maintenance (O&M) plan. The O&M plan will contain information regarding maintenance of asbestos-containing floor tiles, repairing nonfriable ACM which becomes damaged, and prevention of damage so that future owners or occupants can minimize the chance of exposure of building occupants to airborne asbestos fibers (U.S. Department of the Navy 1994).

Each of the reuse scenarios evaluated in this FEIS include plans to demolish buildings that exhibit poor potential for reuse or would interfere with specific elements of the individual reuse scenarios. According to existing asbestos survey data, many of the buildings designated for demolition contain large quantities of transite board and other types of ACM. Prior to building demolition, ACM that is considered friable, damaged, or accessible will be removed by the Navy.

4.13.5.3 Lead Paint

DoD policy with regard to lead-based paint (LBP) is to manage LBP in a manner protective of human health and the environment and to comply with all applicable federal, state, and local laws and regulations governing LBP hazards. DoD policy is to manage LBP at BRAC installations in accordance with either 24 CFR 35 or PL 102-550 at the Service's discretion until January 1, 1995, and thereafter solely in accordance with PL 102-550. On January 1, 1995 and thereafter, the provisions of the Residential Lead-Based Paint Hazard Reduction Act of 1992 concerning the transfer of federal property for residential use take effect. These provisions, codified at 42 USC § 4822, are applicable to target housing, which

is housing constructed prior to 1978, with limited exceptions for housing for the elderly or persons with disabilities or any 0-bedroom dwelling.

Target housing constructed after 1960 and before 1978 must be inspected for LBP and LBP hazards. The results of the inspection must be provided to prospective purchasers or transferees of BRAC property, identifying the presence of LBP and LBP hazards on a surface-by-surface basis. Target housing constructed before 1960 must be inspected for LBP and LBP hazards and such hazards must be abated. The results of the LBP inspection will be provided to prospective purchasers or transferees of BRAC property identifying the presence of LBP and LBP hazards on a surface-by-surface basis and a description of the abatement measures taken.

The inspection and abatement discussed above will not be required when the building is scheduled for demolition by the transferee and the transfer document prohibits occupation of the building prior to the demolition, the building is scheduled for non-residential use or, if the building is scheduled for residential use, the transferee conducts renovation consistent with the regulatory requirements for the abatement of lead-based paint hazards.

Due to the age of the existing structures at the Charleston Naval Base, it is likely that lead paint exists in nearly all structures that have been painted. No studies have been done to date to indicate the actual extent or presence of lead-based paint at the base; however, a survey of housing areas will be conducted that will include analysis of the paint for lead on housing structures that were built prior to 1982, where paint is damaged or peeling (U.S. Department of the Navy 1994).

4.13.5.4 Polychlorinated Biphenyls (PCBs)

All PCB-containing transformers remaining on Base property have been removed. The EBS has identified additional transformers suspected of containing PCBs. In addition, it is possible that PCBs exist in hydraulic fluids or other equipment. These items will be addressed by individual commands as part of their operational closure plan (U.S. Department of the Navy 1994).

Because CNSY performed submarine overhauls, and electrical wire containing PCBs was often removed during such activities, the possibility of identifying further PCBs and PCB-contaminated material exists (Franklin 1994). Electrical light ballasts containing PCBs will continue to be identified over time. Areas containing PCB-containing or PCB-contaminated equipment will be surveyed. If the equipment is in use and the PCBs are contained, they will be identified but not removed, otherwise the equipment will be removed (Franklin 1994).

The Navy's general protocol for investigating and remediating PCB spill areas is to clean up the spill areas immediately after they have occurred.

4.13.5.5 Radiological Aspects

Detailed survey plans for NNPP radiological decommissioning of CNSY and Charleston Naval Base have been prepared by the Navy. Facilities at CNSY and Charleston Naval Base having a radioactivity potential associated with NNPP have been identified. This categorization was based on past and present use of the facilities, review of past radiological surveys, operating records, and interviews with senior employees. A list of these facilities is contained in Table E-7 of Appendix E. A designator in the Radiological Designator column of the table identifies each facility where radioactive material associated with NNPP was worked on and/or stored. Each facility identified will have all radioactive material associated with NNPP removed. Following removal, detailed surveys will be conducted to verify the removal of radioactivity (U.S. Department of the Navy 1994).

In addition to NNPP radioactivity, general radioactive materials (G-RAM) have been used and stored in locations at CNSY and on Charleston Naval Base. G-RAM includes radiographic sources used for nondestructive test purposes, sources used for instrument calibration, electrical instrumentation containing vacuum tubes with radioactive elements, radium dials and gauges, and naturally occurring radioactive materials such as potassium-40, thorium, and uranium and thorium daughter products. Facilities at CNSY and Charleston Naval Base which have a potential for radioactive contamination from these sources have been identified. A list of these facilities is contained in Table E-7 of Appendix E. The Radiological Designator column in this table identifies each facility where radioactive material associated with G-RAM may exist. Each facility will be surveyed to identify the presence or document the absence of these radioactive materials, and corrective action will be taken as necessary (U.S. Department of the Navy 1995).

4.13.5.6 Radon

The radon level in Building 202 was found to exceed the action levels established by EPA during the Navy's radon survey. According to the EPA action levels, mitigation of radon at this level must be completed within 5 years. Pursuant to Navy policy, information concerning the radon levels will be disclosed to the purchaser of this property (U.S. Department of the Navy 1994).

4.13.5.7 Ordnance

The ordnance sites are being addressed under early action strategy as part of the RFI program as discussed above (U.S. Department of the Navy 1994).

4.13.5.8 Pesticides

Pesticide sites are being investigated under the corrective action program and will be remediated prior to Base closure (U.S. Department of the Navy 1994).

4.13.5.9 Outfalls and Miscellaneous Discharges

The NPDES and NCSD discharge permits for the Base include clauses on transfer of property and permit status. Because of the complexity of the effort that will be required when the Base is transferred, provisions will be established with SCDHEC and NCSD to expedite the transfer of these permits and to simplify the burden on the purchaser/receiver of the property. This will be particularly important for process and storm water discharges to the Cooper River because of the age of the NPDES permit and the drastic changes in water quality standards since the permit was issued in 1980 (U.S. Department of the Navy 1994).

5 Relationship of the Proposed Action to Federal, State, and Local Plans, Policies, and Controls

5.1 Applicable Statutes and Regulations

The following applicable statutes and regulations have been considered in the development of this FEIS.

- Base Closure and Realignment Act of 1990 (Title XXIX of P.L. 101-510 as amended by P.L. 102-190 and P.L. 102-484);
- President Bill Clinton's Five-Part Plan, "A Program to Revitalize Base Closure Communities";
- The National Defense Authorization Act for Fiscal Year 1994; Title XXIXA—Base Closure Community Assistance (P.L. 103-160);
- Department of Defense Interim Final Rule, 30 CFR Parts 90 and 91: "Revitalizing Base Closure Communities and Community Assistance";
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations;
- Deputy Secretary of Defense Memorandum, "Fast Track Cleanup at Closing Installations";
- Stewart B. McKinney Homeless Assistance Act (42 U.S.C. 11301, *et seq.*);
- National Environmental Policy Act (42 U.S.C. 4321, *et seq.*);
- Clean Water Act (33 U.S.C. 1251, *et seq.*);
- Endangered Species Act (16 U.S.C. 1531, *et seq.*);
- Fish and Wildlife Coordination Act (16 U.S.C. 661, *et seq.*);

- Clean Air Act (42 U.S.C. 7401, *et seq.*);
- National Historic Preservation Act (16 U.S.C. 470(f));
- Navy Guidance Provided by OPNAVINST 5090.1A;
- Executive Order 11988, Floodplain Management, as amended by Executive Order 12148, dated July 20, 1979;
- Executive Order 11990, Protection of Wetlands, dated May 24, 1977;
- Coastal Zone Management Act of 1972 (16 U.S.C. 1451, *et seq.*);
- Resource Conservation and Recovery Act (40 CFR 260-270);
- Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601, *et seq.*);
- Occupational Safety and Health Act (29 U.S.C. 651, *et seq.*);
- Hazardous Materials Transportation Act (49 U.S.C. 1801, *et seq.*);
- The Rivers and Harbors Act of 1899;
- The Marine Protection, Research and Sanctuaries Act;
- The Fish and Wildlife Act of 1956;
- The Migratory Marine Game-Fish Act;
- The Marine Mammal Protection Act of 1972;
- 33 CFR Parts 320-330;
- South Carolina Coastal Zone Management Act of 1977;
- South Carolina Hazardous Waste Management Act;
- South Carolina Standards for storm water management and sediment reduction;
- Charleston 2000 Plan;
- North Charleston Zoning Ordinance; and
- North Charleston Comprehensive Development Plan.

5.2 Regulatory Consistency Overview

This FEIS has been prepared in compliance with BRAC, NEPA, OPNAVINST 5090.1A, Chapter 5, Deputy Secretary of Defense Memorandum, Title XXIX of the National Defense Authorization Act for Fiscal Year 1994; the U.S. Department of Defense Interim Final Rule for 30 CFR 90 and 91 that requires preparation of an EIS, specifies that environmental impacts of the proposed action and alternatives to the proposed action be evaluated, and provides guidance for defining the proposed action as the disposal of property and redevelopment according to a local redevelopment plan or reasonable assumptions as to the likely reuse scenarios and their reasonable alternatives.

Also, in compliance with the President's Five-Part Plan, Title XXIX of the National Defense Authorization Act for Fiscal Year 1994, the U.S. Department of Defense Interim Final Rule for 30 CFR 90 and 91, and the Stewart B. McKinney Homeless Assistance Act, redevelopment of the Charleston Naval Base property for jobs creation and/or homeless assistance has been and will be considered as the property disposal process continues. The DEIS was distributed for comment to all appropriate federal, state, and local agencies, organizations, and interested persons. This FEIS addresses all substantial comments received both orally and in writing. In compliance with BRAC, Charleston Naval Base will disestablish on April 1, 1996.

In compliance with the Clean Water Act and Executive Order 11990, development in wetland areas would be minimized to the extent practical. Approvals or permits for wetland alteration would be required prior to construction from USACE. Section 10 and Section 404 permits would be required for construction of the Marine Cargo Terminal and the railway/roadway crossing of Shipyard Creek if either Development Concept 3 or 3A is implemented. Also in compliance with the Clean Water Act, appropriate state and federal permits would be obtained to accommodate any future wastewater discharges resulting from Base redevelopment. All retention and/or detention ponds would be constructed entirely on the upland sides of wetland boundaries and would be designed based on specifications included in the South Carolina Standards for Storm Water Management and Sediment Reduction (South Carolina Code of Regulations 72-300).

In compliance with the Endangered Species Act and the Fish and Wildlife Coordination Act, appropriate federal and state agencies were contacted to determine the potential for the proposed action to impact threatened or endangered species and fish and wildlife habitat. As noted in Section 5.2 of this FEIS, Development Concept 3 and 3A would impact a Least Tern nesting colony as a result of demolition of buildings upon which the colony is located.

Mitigation has been proposed to minimize the effects of this plan. These colonies would be avoided by Development Concept 3B.

The rules guiding the determination of conformance of an action with the Clean Air Act (CAA) of 1970, 42 USC 7401 *et seq.*, amended 1977 and 1990, are set forth in 40 CFR Parts 6, 51, and 93. Because the proposed action entails disposal of the Charleston Naval Base and transfer of the land to other parties, any future air emissions and related conformity determination (if applicable) are not the responsibility of the Navy because a land transfer does not specifically approve, authorize, or permit these future activities. Compliance of future development/redevelopment projects at the former Naval Base property with applicable air quality regulations would be the responsibility of the SCDHEC and the Redevelopment Authority. The area is in attainment for all criteria pollutants.

In compliance with the National Historic Preservation Act, appropriate federal, state, and local agencies were contacted regarding the potential for the proposed action to impact cultural resources of historical or archaeological significance. No areas of archaeological sensitivity would be affected. Any future action that would affect one of the 116 NRHP-eligible structures would need to comply with the terms and conditions of a Memorandum of Agreement between the Navy and the SHPO.

In compliance with Executive Order 11988 and the federal Coastal Zone Management Act (CZMA) of 1972, the proposed action will not involve significant new construction in a floodway. Although construction of the Cargo Terminal and port facilities would be within the 100-year coastal floodplain, this will not adversely affect existing water use or natural resources of the coastal zone. Although significant new construction related to operation of the port facility will take place in the floodplain, including about 20 acres in Flood Zone V7, such construction on the land side of the existing bulkhead would be allowable under CFR 44 60.3 and under the state Coastal Zone Management Program, which is consistent with the federal CZMA. As proposed in Development Concepts 3 and 3A, the Cargo Terminal would not be located closer than 150 feet from the maintained channel. As such, impacts to channel maintenance are unlikely. Development Concept 3B would not affect the Cooper River because the plan does not include a cargo terminal facility.

In compliance with the DoD Installation Restoration Program and applicable federal statutes and agreements (RCRA, CERCLA, and TSCA), friable, accessible, damaged ACM; USTs; and PCB-contaminated transformers will be identified, removed, and properly disposed of. All SWMUs and AOCs will be remediated in accordance with federal and state

regulations and current DoD policies. See Table 5-1 for the status of environmental permits at Charleston Naval Base.

In compliance with CERFA and the Deputy Secretary of Defense Memorandum, an EBS will be completed. A Finding of Suitability to Lease (FOSL) or a Finding of Suitability to Transfer (FOST) will be prepared, stating that the property is suitable for lease or transfer without restrictions or outlining the proposed restrictions on the future use of the property. In addition, deeds prepared for transfer will state that the Navy will be responsible for corrective measures found to be necessary after the date of transfer and provide clauses granting the Navy access to the property to conduct such corrective actions. Because of site contamination and ongoing remedial activities, Base redevelopment could be altered.

The Rivers and Harbors Act of 1899 regulates activities in navigable waters, prohibiting unauthorized damming, destruction, and alteration. Section 10 of this act regulates construction of any structure in or over navigable waters, as well as any other activity that may require dredging or felling of the waterway.

The Marine Protection Research and Sanctuaries Act of 1972, the Fish and Wildlife Act of 1956, the Migratory Game Act, Fish Act, Fish and Wildlife Coordination Act, and Marine Mammal Protection Act all express the will of Congress to protect the quality of the aquatic environment as it affects the conservation, improvement, and enjoyment of fish and wildlife resources. These laws necessitate that consultation must be done with the USFWS, MMFS, and appropriate state agencies prior to approval of any project involving modifications to any body of water (33 CFR Part 320). These programs are overseen by the Department of Commerce and the Department of Interior.

In general, Development Concepts 3, 3A, and 3B are consistent with the established land development patterns in the vicinity and local government plans and regulations (i.e., City of North Charleston Comprehensive Plan, City of North Charleston Zoning Ordinance). The redevelopment process will be required to comply with the City of North Charleston's Comprehensive Development Plan. The City of North Charleston has endorsed Development Concept 3B, and it is the intent of the Planning Commission and City Council to adopt this plan as an amendment to the Comprehensive Plan. The City of North Charleston would also need to amend the Zoning Ordinance, as necessary, to accommodate Development Concept 3B. If the zoning designation of the Base is not amended prior to implementation of the plan, the existing heavy industrial (M-2) classification, which permits all land uses designated within Alternative Reuse Scenario 3 with the exception of residential dwellings, will be enforced.

<p align="center">Table 5-1</p> <p align="center">CHARLESTON NAVAL SHIPYARD</p> <p align="center">ENVIRONMENTAL PERMITS AND LICENSES^a</p>		
Item Description (Permit Issuer)	Permit Serial/Approval Number	Expiration Date
Air Operating Permit (SCDHEC)	0560-0002	Expired renewal requested—synthetic minor Title V status applied for.
Air Construction Permits (SCDHEC)	0560-0002 CC through CJ	Being added to Air Operating Permit
Wastewater Permit - Naval Base - NPDES (SCDHEC)	SC 0003816	Expired renewal requested
Wastewater Permit - Naval Base (North Charleston Sewer)	008	January 1994
Dockside Chlorination Approval (SCDHEC)	"As built" construction permit, SCDHEC letter of 4 June 92	No expiration date
Group NPDES Storm Water Permit (USEPA)	Applied for 9 July 92	Permit not issued - Interim use permit
Potable Water - Naval Base (SCDHEC)	1010502	Expired Evaluating fee prior to renewal
Federal Hazardous Waste Permit (USEPA)	USEPA 170 022 560	December 1994
State Hazardous Waste Permit (SCDHEC)	SCO 170 022 560	December 1994
Hazardous Waste Transporter Permit (SCDHEC)	SCO 170 022 560	21 May 96
Dredging Permit - Naval Base & Naval Weapons Station (Dept. of Army)	85-40-324	31 March 96
Underground Storage Tanks Permits - Naval Base (SCDHEC)	24 Tanks	Life of Tanks
Solid Waste Approval (SCDHEC)	9211001	9 February 94

^a The Navy currently holds more than 200 permits from the Corps of Engineers. Permits have been obtained for every pier and all construction/filling activities conducted at the Base since 1849. A listing of all permits herein is not necessary; however, some of these permits (i.e., for 23 existing piers) will need to be transferred to the new owner of the Base following property transfer.

To ensure consistency of site redevelopment with regulatory controls during the 20- to 30-year implementation period, the following agencies, at a minimum, would need to be informed by the Redevelopment Authority prior to implementing major components of site redevelopment (e.g., Cargo Terminal, Intermodal Railyard, Marine Industrial Park, I-26 rail access across Shipyard Creek, etc.): USEPA, USACE, USHWS, Federal Highway Administration, SCDHEC, Office of Ocean and Coastal Resources Management (formerly the South Carolina Coastal Council), SCSHPO, SCDOT, state/federal natural resource trustees, City of North Charleston, Charleston County, the developer of the cargo terminal, and local community groups (e.g., Chicora Neighborhood, Union Heights, Cherokee Park, etc.).

5.3 Coastal Zone Consistency

According to Section 304(1) of the federal CZMA of 1972, as amended, federal lands within any state's coastal zone are "by law subject to the discretion of or which is held in trust by the Federal Government, its officers or agents and are, as such, to be excluded from the coastal zone." However, as required by Section 307(c) of the CZMA, the proposed federal action (i.e., property disposal, issuance of federal permits) must be shown to be consistent, to the greatest extent practical, with the approved South Carolina Coastal Zone Management Plan.

The State of South Carolina protects its coastal environment through its Coastal Zone Management Act of 1977. The purpose of the act is to "protect the quality of the coastal environment and to promote the economic and social improvement of the coastal zone and all the people of the state." The act created the South Carolina Coastal Council [now referred to as the Department of Health and Environmental Control, Office of Ocean and Coastal Resource Management (OCRM)], whose duties include working with other state and local agencies in managing activities that have a direct and significant impact on the state's coastal zone. In this role, the OCRM is involved with the review and certification of permits issued by other state and local agencies, but would issue consistency determinations for all federal actions involving projects within the coastal zone. For example, OCRM would issue a permit to the entity charged with redevelopment for alteration of the existing docking facilities, and would issue a consistency determination for federal permits (e.g., USACE Section 404 permit). In addition, the act established "critical areas" that are to be directly managed by the OCRM. The OCRM has direct permitting authority over development projects within critical areas, which are defined as the areas from the high-water mark to the landward point where

tideland vegetation changes from predominately brackish to predominately fresh (South Carolina Coastal Council 1993).

In order to effectively manage the critical areas of the state's coast, the OCRM developed the South Carolina Coastal Management Program, which establishes the goals and policies used to guide the OCRM in its review and decisions on development projects in the critical areas. These goals and policies are implemented through the South Carolina Coastal Zone Rules. These rules are intended to aid developers in developing projects that are consistent with the environment, to ensure consistent permit evaluations by the Coastal Council, and to serve as a stimulus for implementation of better and more consistent management efforts in the coastal zone.

The types of projects that are subject to the goals and policies of the Coastal Zone Management Plan and the South Carolina Coastal Zone Rules include the following:

- Residential Development;
- Transportation Facilities, including ports, roads and highways, airports, railways, and parking facilities;
- Coastal Industries, including agriculture, forestry, mineral extraction, manufacturing, fish and seafood processing, and aquaculture;
- Commercial Development;
- Recreation and Tourism;
- Marine-Related Industries, including marinas, boat ramps, and docks and piers;
- Wildlife and Fisheries Management;
- Dredging;
- Public Services and Facilities;
- Erosion Control Projects; and
- Energy and Energy-Related Facilities.

In addition, OCRM has policies that restrict development in Areas of Special Resource Significance, including navigation channels, wetlands, and public open spaces. The OCRM also performs a consistency review process for all development projects in the coastal zone that either directly or indirectly involve federal agencies. Such projects may include direct federal activities; outer continental shelf exploration, development, and production

activities; projects using federal assistance; and projects requiring certain federal licenses and permits (South Carolina Coastal Council undated).

The primary concern of the OCRM is whether the conceptual plan to be implemented meets the stated goals and policies of the Coastal Zone Management Program. Based on review of the proposed development plans and conversations with personnel at the OCRM, the following issues would be the most salient and relevant:

- The development of a port facility along the Cooper River;
- Management of storm water runoff from the proposed developments;
- Mitigation of wetlands that would be dredged and/or filled to carry out the proposed developments; and
- The potential for Shipyard Creek to lose its navigability as a result of the proposed bridge and road crossing at the southern end of the Base.

Only Development Concepts 3 and 3A involve the development of a Marine Cargo Terminal facility, Marine Industrial Park, and rail access across Shipyard Creek. Implementation of either of these plans would require submitting a port development plan to the OCRM for a construction permit. All of the conceptual plans will require submitting a storm water management plan to the OCRM. Once approved, the OCRM will issue a storm water management permit for the proposed development(s). In order to properly protect existing wetlands and to ensure that the appropriate mitigation measures are considered when it is necessary to disturb wetlands, a wetlands master plan must be submitted to the OCRM. Once approved by the OCRM, the plan will be reviewed by USACE and a Section 404 Permit may be issued. A Section 404 permit would be needed if there is a loss of more than 10 acres of wetlands, as would result from Development Concept 3. All of the conceptual plans would require the submission of a wetlands master plan.

The proposed construction of a rail and roadway bridge across Shipyard Creek as proposed in Development Concepts 3 and 3A would conflict with a policy of the South Carolina Coastal Zone Management Program. The aforementioned policy states that, within navigation channels, "Development which would result in loss of navigability will be prohibited" (South Carolina Coastal Council undated). The development of such a bridge may preclude the movement of ship traffic in and out of the upper reaches of Shipyard Creek and would need to be addressed during the permit review. Mitigation could involve constructing a moveable lift bridge to allow vessel traffic to access the upper reach of

Shipyard Creek or negotiating an agreement between affected land owners and the Redevelopment Authority or other entity charged with redevelopment to allow goods to be transported through the proposed Marine Cargo Terminal directly to industrial sites. This issue will need to be resolved by the Redevelopment Authority prior to seeking a Section 9 permit from the U.S. Coast Guard and a coastal zone consistency determination from OCRM. It should be noted that only Development Concepts 3 and 3A would involve a crossing of Shipyard Creek.

5.4 Environmental Justice

Consistent with the Executive Order 12898 of February 11, 1994, it is the Navy's policy to identify and address disproportionately high and adverse human health or environmental effects of actions on minority and low-income populations. This policy states that the Navy shall:

- Ensure that all programs or activities under its control receiving federal financial assistance and that affect human health or the environment do not directly or indirectly use criteria, methods, or practices that discriminate on the basis of race, color, or national origin;
- Analyze the human health, economic, and social effects of Department of the Navy actions, including effects on minority communities and low-income communities, when such analysis is required under NEPA;
- Ensure that whenever feasible, mitigation measures outlined or analyzed in the environmental impact statement, or Record of Decision (ROD), address significant and adverse environmental effects of proposed federal actions on minority communities and low-income communities;
- Ensure that opportunities for community input in the National Environmental Policy Act process are provided, including identifying potential effects and mitigation measures in consultation with affected communities, and improve the accessibility of meetings, crucial documents, and notices; and
- Ensure that the public, including minority communities and low-income communities, has adequate access to public information relating to human health or environmental planning, regulation, and enforcement.

All criteria, methods, and practices utilized in the preparation of this EIS to evaluate the significance of impacts resulting from the reuse scenarios developed by BEST were based on scientific and technical methodologies and do not discriminate either directly or indirectly

on the basis of race, color, or national origin. All methods of data collection, analyses, and evaluation utilized are widely accepted and are unbiased scientific and technical practices.

The purpose of this EIS is to address potential environmental, social, and economic impacts associated with the disposal of the Charleston Naval Base and subsequent reuse of the property pursuant to the reuse scenarios prepared by BEST. Minority and low-income communities that will be affected by the project are primarily within the City of North Charleston and, in particular, the Chicora, Union Heights, and Cherokee Park neighborhoods.

As described in Section 3, the Charleston Naval Base is located in the City of North Charleston, Charleston County, South Carolina. Most of the areas directly contiguous with the Base are considered to be minority or low-income neighborhoods. The neighborhoods directly adjacent to the facility are delineated by the 1990 Census of Population and Housing and include portions of Census Tracts 34, 36, 37, 41, 43, and 45 located in the City of North Charleston.

The total population of these tracts is 16,615 persons. The racial composition of this population is 46% white, 51% black, and 3% of other racial groups. Minority groups account for more than 83% of the population in some census tracts directly adjacent to the base (e.g., the Chicora Neighborhood). Per capita income is also very low in these tracts. In 1990, the Chicora Neighborhood (Census Tract 43) had a per capita income of only \$5,725 compared to the overall figure for the city of \$10,315. In contrast, Census Tract 36, which is adjacent to the northern portion of the base, had a per capita income level greater than the city's average in 1990 (U.S. Bureau of the Census 1992).

Alternative Reuse Scenario 3: Development Concept 3

As discussed in Section 4, impacts under Development Concept 3 that would be localized in nature involve recreation activities, land use, transportation and site access, air quality, and community services.

Development Concept 3 provides for an expansion of recreational activities and facilities, and community access to these facilities at the former Charleston Naval Base. The facilities include active, passive, and waterfront recreation facilities. Activities provided to the local community by the development of these facilities include access to outdoor play fields, courts, and diamonds; a bowling alley; a swimming pool; open-space walkway areas; and activities associated with waterfront enjoyment. Development Concept 3 will create positive impacts to the local neighborhoods as it provides additional recreational activities in the area.

Land use impacts to the surrounding neighborhood will also be positive because Naval Base lands adjacent to surrounding neighborhoods are planned for less intense, more compatible land uses. In addition, remediation of contaminated sites that are in proximity to the surrounding neighborhoods is provided.

Stationary air emissions for Development Concept 3 would be similar to current conditions; however air emissions from mobile sources would be higher than current conditions primarily due to the significant increase in rail traffic associated with Concept 3. Nitrogen oxide emissions would increase while sulfur dioxide, carbon monoxide, particulate matter, and volatile organic compound emissions would decrease.

Construction and operation of the I-26 and the CSX lines adjacent to the residential areas to the Cargo Terminal would result in noise levels noticeable to the residential community.

Development Concept 3 calls for significant improvements and realignments of existing roadways. Vehicular traffic is expected to increase as a result of implementation of Development Concept 3.

Facilities will be made available to community service providers such as McKinney Act agencies and the National Civilian Community Corps (NCCC). These sources provide office training, child development programs, specialized housing and medical facilities.

Appropriate mitigation measures have been identified in Section 4 of Concept 3. If these measures are implemented and the impacts of the project are taken as a whole, Concept 3 will not disproportionately affect minority and low-income communities.

Alternative Reuse Scenario 3: Development Concept 3A

The localized environmental impacts of Development Concept 3A are identical to those of Development Concept 3. Impacts to recreational facilities, land use, air and noise quality, transportation, and community services in the residential areas immediately adjacent to the former Charleston Naval Base will be the same as those identified for Development Concept 3. Measures to mitigate any adverse environmental impacts have been identified in Section 4 of this report. The human health and environment of minority and low-income communities will not be disproportionately affected by this alternative if these measures are implemented.

Alternative Reuse Scenario 3: Development Concept 3B

Localize environmental impacts resulting from the implementation of Development Concept 3B are similar to those cited for Development Concept 3. However, under Development Concept 3B, the existing roadways will not be realigned nor will the CSX line be upgraded. Therefore, the implementation of Concept 3B will result in less air and noise pollution than under Concept 3. Development Concept 3B will not result in any disproportionately high adverse environmental or human health impacts to minority or low-income communities. Appropriate mitigation measures for any adverse environmental impacts have been identified in Section 4 of this report.

Alternative Reuse Scenario 1

No significant localized impacts are expected to result from the implementation of Alternative Reuse Scenario 1. Air quality, noise quality, recreational facilities, traffic, and land use are expected to remain similar to or improve over existing levels while recreational facilities and community services are expected to improve in the local area. No disproportionately high adverse environmental or human health impacts to minority or low-income neighborhoods are expected to occur under this alternative.

Alternative Reuse Scenario 2

Alternative Reuse Scenario 2 is not expected to create any significant localized adverse environmental impacts. Recreational facilities, localized land use, air and noise quality, and community services are expected to be improved as a result of this alternative. Traffic is anticipated to remain approximately the same although major roadway realignments will occur. No disproportionately adverse environmental or human health effects are expected to result from implementing Alternative Reuse Scenario 2.

Community Involvement

As discussed in Section 1, ample opportunity for community input into the preparation of this FEIS was provided.

The BEST Committee held several meetings in both North Charleston and the Chicora neighborhood. In addition, the Navy and BEST held a joint public informational meeting/scoping meeting at both the City of North Charleston municipal building and the Chicora Neighborhood Center. In addition to extensive media coverage of the Reuse Plan, both BEST and the Navy have conducted public mailings and have provided and will continue

to provide ample opportunity for all individuals and groups to participate in the reuse planning process and NEPA processes.

The DEIS was distributed to all interested agencies and those individuals who requested a copy (based on availability), as well as to local libraries, schools, and the Navy's Public Affairs Office. In addition, the Restoration Advisory Board (RAB), which includes 12 local community members, meets regularly to discuss, and incorporate public comment into, the environmental contamination/cleanup investigations at the Base.

6

Unavoidable Adverse Environmental Effects and Considerations That Offset Adverse Effects

Early stages of redevelopment activity would involve a great deal of demolition activity. Buildings with little or no evaluated potential for reuse, old steam lines, machinery, utilities, and other unnecessary structures would be demolished. Adverse environmental effects during demolition activities would include periodic high noise levels, fugitive dust emissions, increased vehicle traffic, and a temporarily increased demand for solid waste disposal capacity. These effects, however, would be short term and would be contained in areas where specific redevelopment activities are proposed. All demolition will be accomplished in accordance with state and federal regulations.

As new construction projects are undertaken on the property, temporary adverse environmental effects that may be expected include increased construction vehicle traffic, fugitive dust emissions, and increased noise levels. Considerations that offset these effects are their temporary duration and localized nature, the development and implementation of a soil erosion and sediment control plan and storm water management plan, and implementation of fugitive dust controls.

Redevelopment activities are expected to be phased in over a 20- to 30-year period. As a result, demand for water supply, steam supply, and potable water supply are expected to decrease substantially in the early stages of redevelopment. Peak demand under the full redevelopment scenario is expected to generate a total utility demand approximately 30% less than currently existing conditions. Similarly, existing storm water management systems would be improved to meet regulatory standards, which would result in a positive environmental effect.

Other unavoidable adverse environmental effects include noise and light nuisances resulting from the operation of the Marine Cargo Terminal, if developed. Noise would be generated by loading and unloading activities; however, because of the distance from the

terminal to the nearest residential area, noise levels would not be significant. Noise levels in the residential areas would increase in the vicinity of the proposed rail/road access corridor, but given other noise sources in the area (i.e., existing CSX mainline, I-26, Spruill Ave, Industrial operations), these noise impacts will not be significant. Light from nighttime illumination of the Marine Industrial Park and Cargo Terminal, if developed, would be noticeable from nearby residential areas as a glare to the east. Considerations that affect potential impacts include mitigating techniques, including screening and shading of lighting fixtures (i.e., light poles) to direct the light downward and minimize off-site glare.

The loss of approximately 20.5 acres of wetlands would be an adverse environmental effect of Development Concept 3. Although loss of much of this acreage would be unavoidable, some areas could be avoided by minor design changes during the final engineering phase. Other considerations that offset the loss of wetlands would include wetland compensation as determined appropriate by the USACE. Wetland compensation could include creating new wetland areas or preserving/enhancing existing wetland areas in the vicinity of the Base. Implementation of Development Concept 3A would only affect approximately 9.3 acres, thereby reducing the area of existing wetlands impacted; Development Concept 3B would impact 3 to 4 acres, further reducing wetland impact.

Construction of the Marine Cargo Terminal as proposed in Development Concepts 3 and 3A would cause unavoidable short-term impacts to water quality and benthic habitats of the Cooper River. These impacts would be offset by long-term improvements to water quality resulting from cessation of fueling operations, ship maintenance, and other naval activities responsible for chronic water quality degradation. The support pilings for the terminal would also provide hard substrate for attachment of filter-feeding organisms, creating the potential for a long-term increase in estuarine species diversity, thereby mitigating short-term adverse impacts to soft-bottom communities. Construction of the terminal may also have long-term unavoidable impacts on sedimentation of the Cooper River and channel maintenance dredging requirements, although the specific impacts are unpredictable at this time. However, additional dredging that may be required for channel maintenance (and its consequential environmental impact) may be offset by reduced maintenance dredging needed for the area under the Cargo Terminal.

Unavoidable adverse effects to the Cooper River hydrology will need to be identified through modeling of the river and dredging requirements at such time as the developer of the cargo terminal has prepared detailed engineering and design plans. Methods for avoiding or minimizing impacts to the Cooper River will be determined when detailed plans are available, and appropriate USACE Section 10 permits are applied for by the project developer.

Development Concept 3 would also unavoidably affect SWMU 9 and SWMU 14, thus affecting and being affected by development constraints inherent as a result of the cap and restrictions on use of these areas following remediation. Implementation of either Development Concept 3A or 3B would offset these adverse effects by avoiding these areas entirely.

7 Relationship Between Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term uses of the environment under the proposed action include temporary impacts to the physical environment during site preparation and demolition/construction and short-term socioeconomic impacts, including maintenance/construction costs, expenditure of public funds for site improvements, and lost productivity and wages. Redevelopment of the Charleston Naval Base as proposed would enhance long-term productivity of the site by developing productive long-term uses of an industrial site currently being closed; increasing the efficiency and effectiveness of the use of the property; providing land for maritime/shipyard facilities and industrial/economic development; establishing an intermodal transportation network and improving vehicular and nonvehicular access; improving aesthetic resources; and increasing economic activity, revenue generation, and employment in the surrounding Trident Region.

Prior to redevelopment of the Naval Base property, existing buildings with no reuse potential would need to be demolished, existing infrastructure would need to be modified or removed, environmental restoration would be required, and vegetation would be removed to clear areas for redevelopment. Some wildlife would be displaced, and soils would be exposed to possible wind or storm water erosion until the area is covered or replanted. Other wildlife would be permanently displaced as a result of alteration of habitats. For example, the Least Tern nesting areas would be affected by Development Concepts 3 and 3A. Long-term productivity of the local Least Tern population could be severely affected by the demolition of structures with nesting populations and by other cumulative loss of nesting habitat throughout South Carolina. Implementing Concept 3B or avoidance of impacts to these structures during nesting seasons (May through July) and provision of areas available for nesting would serve to maintain and potentially enhance existing Least Tern nesting productivity. Construction vehicle noise and emissions would impact the environment for the short-term construction period. However, these impacts would be mitigated to the extent possible. Appropriate soil

erosion and sediment control plans and storm water management plans will be prepared for the construction site.

8

Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable resources will be committed by the Navy, the City of North Charleston, the State of South Carolina, the Redevelopment Authority or other entity charged with redevelopment, and other federal and regional entities to redevelop the Naval Base. Resources committed would include building materials and supplies, demolition/construction labor, planning/engineering cost, about 1,500 acres of federally owned land, 20.5 acres of wetlands, 130 acres of Cooper River open-water habitat, and natural resources such as water, air, and electricity or gas for power.

The expenditure of public funds for site preparation and redevelopment activities is not entirely irretrievable in that the investment will improve the desirability of the lands, increase the likelihood of being redeveloped, and create the economic benefits that are a primary goal of the Reuse Plan. As such, these public expenditures will be partially retrieved by implementation of Development Concept 3, 3A, or 3B as proposed.

The proposed action would result in a short-term decrease in energy demand by the facilities on the property. Following complete implementation of the preferred alternative, energy demand would increase, but it is still not expected to match current levels.

The demolition of nonreusable buildings and upgrade of older buildings scheduled for reuse would result in much greater energy efficiency across the property. Much of the existing building space is heated with steam supplied by the City of North Charleston's waste-to-energy incinerator. Existing steam lines that run to most facilities on the property are planned to be removed, and individual buildings would be retrofitted with individual climate control systems. This retrofitting process will result in more efficient use of energy by facilities on the property. The use of steam from the Foster-Wheeler Waste-to-Energy Plant would be discontinued. This will allow Foster-Wheeler to install additional electric generators and thus provide increased electrical loads to the local electrical grid.

To promote conservation efforts, all construction and demolition (C&D) wastes will be recycled and reused to the maximum extent practical. This would include using material such as bricks, stone, concrete, and pavement as fill material where needed.

Operation of a state-of-the-art intermodal rail terminal as proposed in Development Concepts 3 and 3A would result in a long-term reduction in energy usage by various modes of transportation (e.g., ship, rail, truck, etc.) by providing for the efficient flow of materials from the terminal to various markets. Improved traffic flow and efficiency would reduce fuel consumption.

Also, the demolition of older structures to allow for more-energy-efficient new construction would improve cooling and heating efficiencies and would reduce the overall demand for electrical power on the Base.

Urban Quality, Historic and Cultural Resources, and Design of the Built Environment, Including the Reuse and Conservation Potential of Various Alternative and Mitigation Measures

Implementation of Development Concept 3, 3A, or 3B would improve the urban quality and design of the built environment at the Base. The proposed redevelopment, including building demolition, renovation, and new construction, would result in aesthetic and landscape improvements. The urban quality and design of the Base would improve from its current *ad hoc* mix of aesthetically sterile and inconsistent architecture to a planned and landscaped design and layout that compliments existing historic and functional areas (i.e., the shipyard). The inclusion of open-space area, landscaping, and other amenities (i.e., bike trails, green-space linkages to the surrounding community, and visually enhanced entrance promenade) would serve to enhance the quality of the urban design and character of the Base.

Historic and cultural resources will be preserved via the terms and conditions of a Memorandum of Agreement between the Navy and the South Carolina Department of Archives and History (SCDAH). The opportunity exists for the adaptive reuse of the 116 structures determined by SCDAH to be NRHP-eligible in a manner consistent with local historic preservation objectives (see Section 5.12).

Although Alternative Reuse Scenario 1 would allow for the greatest reuse and conservation of existing structures, it would not provide the needed aesthetic improvements, such as landscaping and open-space improvements, as would Development Concept 3, 3A, or 3B. Alternative Reuse Scenario 2, with its emphasis on tourism and recreational/waterfront use, would preserve and enhance both the urban design and historic resources of the Base. By centering the Cultural Park component of this alternative around the redevelopment of the Olmsted-designed park and Turnbull Plantation, this alternative ensures the renovation and conservation of these cultural resources.

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AADT	annual average daily traffic
ACM	Asbestos-containing material
AOC	Area of Concern
AQCR	Air Quality Control Region
AST	aboveground storage tank
B-2	General Business Zoning District
BCO	Base Closure Office
BCT	BRAC Cleanup Team
BEST	Building Economic Solutions Together Committee
BL	barrels
BOD	biological oxygen demand
BRAC	Base Realignment and Closure Commission
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERFA	Comprehensive Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CHATS	Charleston Area Transportation Study
CIA	Controlled Industrial Area
cms	cubic meters per second
CMS	Corrective Measures Study
CNSY	Charleston Naval Shipyard
CO	carbon monoxide
COMOMAG	Commanding Officer, Mobile Mine Assembly Group
CS	Confirmation Study
CSX	Consolidated Railway System
DEIS	Draft Environmental Impact Statement
DFAS	Defense Finance and Accounting Service
DO	dissolved oxygen
DoD	Department of Defense
DOE	Department of Energy
DRMO	Defense Reutilization and Marketing Office
E2SS	scrub-shrub wetland community
EBS	Environmental Baseline Survey
FEMA	Federal Emergency Management Agency
FFCA	Federal Facilities Compliance Act
FIRE	finance, insurance, and real estate
FISC	Fleet Industrial Supply Center
FMWTC	Fleet and Mine Warfare Training Center
FOSL	Finding of Suitability to Lease

FOST	Finding of Suitability to Transfer
G-RAM	general radioactive material
GPS	Global Positioning System
HAP	hazardous air pollutant
HRS	Hazard Ranking System
HSWA	Hazardous and Solid Waste Amendments
IAS	Initial Assessment Study
IRP	Installation Restoration Program
km ²	square kilometers
LOS	Level of Service
M-2	Heavy Industrial Zoning District
M-1	Light Manufacturing Zoning District
MCL	maximum contaminant level
mg/L	milligrams per liter
NAAQS	National Ambient Air Quality Standards
NACIP	Navy Assessment and Control of Installation Pollutants
NAVRA	Navy Radon Assessment and Mitigation Program
NAVRESCTR	Naval Reserve Center
NAVSTA	Charleston Naval Station
NCSD	North Charleston Sewer District
NCCC	National Civilian Community Corps
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NISE	Naval In-Service Engineering
NNPP	Naval Nuclear Propulsion Program
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Agency
NOI	notice of intent
NPDES	National Pollution Discharge Elimination System
NPL	National Priority List
NWI	National Wetland Inventory
NWS	Naval Weapons Station
O ₃	Ozone
OCRM	Office of Oceans and Coastal Resources Management
OPNAVINST	Operations of Naval Instructions
Pb	lead
pC/L	picoCuries per liter
PCB	polychlorinated biphenyls
PM-10	particulate matter
POMFLANT	Polaris Missile Facility Atlantic
POV	personally owned vehicles
ppt	parts per thousand
RA	Risk Assessment
R-2	Multi-family Zoning District
R-1	Single Family Zoning District
R-3	Mobile Home Zoning District
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
ROD	Record of Decision
SCDHEC	South Carolina Department of Health and Environmental Control
SCDOT	South Carolina Department of Transportation

SCE&G	South Carolina Electric and Gas
SCSPA	South Carolina State Ports Authority
SCWMRD	South Carolina Wildlife and Marine Resources Department
SECNAV	Secretary of the Navy
SFH	shellfish harvesting waters
SIP	State Implementation Plans
SMSA	Standard Metropolitan Statistical Area
SO2	sulfur dioxide
STF	Submarine Training Facility
STP	Site Treatment Plans
SWMU	Solid Waste Management Units
TCPU	Transportation, Communications and Public Utilities
TEDA	Trident Economic Development Authority
TOC	total organic carbon
TPH	total petroleum hydrocarbons
tpy	tons per year
TSCA	Toxic Substances Control Act
UB	unconsolidated bottom sediments
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
VOC	volatile organic compound
WTE	Foster-Wheeler Waste-to-Energy Plant

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Van Dolak, R.F., R.M. Martore, and K.B. Davis, 1989, Charleston Harbor's Living Resources, A Review of Conditions Following Redivision, ASCE July 11-14, 1989. Proceeding of sixth symposium on Coastal and Ocean Management, Charleston, South Carolina, p 2628-2639.

Van Dolak, Robert F., Priscilla H. Wendt, Elizabeth L. Wenner, and Paul A. Sandifer 1990. A physical and ecological characterization of the Charleston Harbor Estuarine System. Marine Resources Division SCWMRD, Charleston, S.C.

Washington, Harold, April 27, 1994, Manager, Transit Operations-Charter Service, Charleston Division, South Carolina Electric and Gas Company and Peter M. Geiger, Ecology and Environment, Inc., personal communication.

Weber, Rudy, Family Housing Office, Charleston Naval Station, April 26, 1994, personal communication with S. Lare of Ecology and Environment, Inc., Lancaster, New York.

Westinghouse Electric, December 28, 1994, memorandum from Bill Remley to Will Sloger, "Ship Exhaust Emission Evaluation Forms."

Williams, Gary, South Division U.S. Navy, April 28, 1994, personal communication with M. Donnelly, Ecology and Environment, Inc., Lancaster, New York.

A

Federal Screening Process

The following information was obtained from the Charleston Naval Base Reuse Plan (BEST 1994).

A.1 Federal Screening Process

When the Naval Base was declared excess to the needs of the Department of the Navy, the Southern Division of the Naval Facilities Engineering Command began the federal screening process. On December 29, 1993, Notices of Availability of Navy Real Property were sent to other Department of Defense (DoD) and federal agencies, giving recipients 30 days in which to express interest in acquiring property. Southern Division received the following eight responses.

DoD/Federal Agency	Buildings/Land	Proposed Use
1. National Oceanic and Atmospheric Administration	RTC1, RTC4, Building 200 and 1874, Parking and Pier R	Center for Coastal Ecosystem Health
2. US Air Force Air Mobility Command	1. Entire Naval Station Annex (42.54 acres); 2. the Marina and 185 acres on the south end of the Naval Base	Expansion for future missions and needed recreation facilities
3. US Department of Transportation, Maritime Administration	Piers and entire Naval Station	Potential Port Development
4. US Army Reserve Command	Naval Station Annex (10 acres); (various buildings on Naval Base)	Reserve Center
5. South Carolina State Ports Authority	Clouter Island dredge disposal site and entire southern end of base	Port Facility
6. US Department of the Interior on behalf of the City of North Charleston and Charleston Parks and Recreation Commission	All developed recreational facilities including the golf course, marina and the Cooper River Center	Community Use
7. Defense Printing Service	Building 1628 (1.5 acres)	Printing Plant
8. South Carolina National Guard	Buildings 180, 1982, 92, 1179, 1143, 89, 658, 199, 1189, 1167, 1265, 1263, 1346, 225 and 1779 (45 acres)	Space for Several National Guard Units

Each of these expressions of interest was evaluated by the BEST Committee based on its job creation or retention potential and the desire to avoid continued federal/Navy ownership. The Community's recommendations are as follows:

- The transfer of property and buildings needed by NOAA has been authorized by congressional legislation and is reflected in Phase I of the Reuse Plan. Long-term expansion of the proposed port facility may require NOAA to relocate elsewhere on the Naval Base. This covenant was addressed in the original congressional legislation.
- The Community supports the Air Force request for transfer of the entire Naval Station Annex. The Community does not endorse the Air Force's request for the marina and 185 acres of adjoining land, because transfer would restrict general community use of the property. The Air Force requirements can be accommodated through other scenarios such as marina slip rental and use of community recreation facilities.
- The Community understands that the Maritime Administration has withdrawn its expression of interest and no longer wishes to acquire property on the Naval Base.
- The US Army Reserve Command has subsequently submitted alternative plans for property at the Naval Complex. These needs should be satisfied via leasing of property from the Redevelopment Authority, as should those of the South Carolina National Guards and Defense Printing Services.
- The Clouter Island dredge disposal site has not been declared excess to date. Continued Navy ownership of the site currently is under review. Use of the facility is critical to reuse of the Naval Base. If the site is excessed, transfer to the Community or assurance of community use under new ownership is of paramount importance.
- The Reuse Plan fully supports, in principal, the remaining requests from the State Ports Authority and the Department of the Interior. However, specifics may vary from requests made through federal screening, and Redevelopment Authority ownership (via an Economic Development Conveyance) is the method preferred by the local community. This would allow the Redevelopment Authority to negotiate subsequent transfers and leases that more readily complement adjacent uses and work within the Reuse Plan.

A.2 Currently Identified Tenants

Four activities currently have commitments for property on the Naval Base. These include the National Oceanic & Atmospheric Administration, the State Department, the

National Civilian Community Corps, and the Defense Finance Accounting Service (DFAS) Center.

- **National Oceanic & Atmospheric Administration (NOAA).** NOAA initially will occupy buildings 200, 1874, RTC1, RTC4, Pier R and adjacent parking areas. The congressional legislation that conveys the property to NOAA stipulates that they may eventually have to move if this location conflicts with later phases of state port development. NOAA initially will employ approximately 80 people in its Center for Coastal Ecosystem Health.
- **State Department.** Buildings 643, 645, 646, 646A, 647, and 649 have already been conveyed to the State Department via congressional legislation. They will relocate an accounting center from Mexico City, which initially will create approximately local 85 jobs by spring of 1995.
- **National Civilian Community Corps (NCCC).** NCCC initially will occupy barracks 66, 67, and two floors of building FBM61 via a one-year license agreement with the Navy. They will train some 250 young people who will perform much needed community service projects in the Trident Region. NCCC will create approximately 45 new jobs, many of which it is hoped, will go to former military members. After base closure, NCCC's long-term needs for Naval Base facilities would be addressed via leases with the Redevelopment Authority.
- **Defense Finance Accounting Center (DFAS).** DFAS will occupy Building 198 to house an expanded Department of Defense accounts office.
- **NISE EAST.** NISE EAST will occupy approximately 310,000 square feet of storage space in the northern portion of the BASE.
- **United States Postal Service.** The Postal Service will occupy a portion of Building 400 to operate as a post office facility.

B

McKinney Act Task Force and Screening

Although this section summarizes the chronology of the McKinney Act screening process for lands and facilities at the Charleston Naval Base, it should be noted that, as of June 1995 all requests for facilities at the Base by homeless providers have been withdrawn. There are currently no approved or pending applications for lands and facilities at the Base on file with the Department of Health and Human Services (HAS).

An important part of the Base Closure process is the Stewart B. McKinney Homeless Assistance Act of 1987. Title V of the Act, "as amended, requires the Defense Department and other Federal agencies to give homeless assistance uses top priority over other uses for "surplus" federally owned buildings or land (including base closure properties) which are determined to be suitable and available and which are not needed by another federal agency" (Interagency Council on the Homeless 1993). The Trident Region's McKinney Act Task Force, a tri-county consortium of providers, was organized by the BEST Committee to consolidate those organizations and public agencies that meet the criteria of the McKinney Act and work collectively to identify facilities and personal property that will allow them to meet this program mission (BEST 1994). The McKinney Act Task Force's mission is "to ensure that the needs of the homeless people in the Trident Region will be met by presenting to the BEST Committee a coordinated plan identifying how the available Charleston Naval Base Properties will be acquired and utilized" (BEST 1994a).

The McKinney Act requires applicants to submit letters of interest to the Department of Health and Human Services (HHS) for suitable available properties within 60 days of the Federal Register publication of available properties. The Charleston Naval Base properties became available in the March 11, 1994 Federal Register. Following HHS's receipt of letters of interest, the agencies have 90 days to submit formal application to HHS. The act requires HHS to evaluate and make a determination of each submitted application within 25 days of receipt of the agencies' application. If approved, an occupancy document is negotiated between the applicant and the appropriate federal landlord agency.

The 37 buildings applied for by Task Force lead agencies reflect a diversity of uses including transitional housing (both family and group), a medical clinic, an integrated services center, a child care facility, a dining hall, warehousing, and job training sites. The properties being applied for by the Task Force are located in three areas of the Naval Base: 1) housing and child development activities in the northern portion adjacent to the proposed office district, 2) warehousing facilities adjacent to the proposed marine industrial district, and 3) the integrated services facility, medical clinic, food service training building, and congregate housing in the southern area.

Table B-1 identifies the community service organizations, building numbers, and type of use which will be locating on the Naval Base property. Figure B-1 illustrates the location of the buildings to be used by these organizations.

There are potential conflicts between Alternative Scenario 3 and the use of certain structures via the McKinney Act process. As shown in Figure B-1, several structures in the southern end of the Base have been designated for use by community services groups, including buildings NS79, 672, FBM61, NS71, NS65, NS66, NS67, and NS69. The use of these properties will conflict with the proposed use of this area as a Marine Cargo Terminal, Intermodal Railyard and the Marine Industrial Park.

It is expected that the full buildout of a cargo facility may take 10 to 20 years, and it will be necessary to negotiate an interim agreement for some portion of the facility with the possibility of relocating conflicting facilities in a manner consistent with their utilization as phased development of the port ensues. The development of the Intermodal Railyard poses immediate conflicts that will require short-term resolution.

There is also a potential conflict with the use of transitional housing in the northern part of the Base with the Waterfront Park as proposed in the Alternative Reuse Scenario 3. This conflict will also necessitate that interim leases be utilized to allow for the relocation of the tenants to other available housing units in the designated housing district further to the west on the Naval Base property.

In an effort to assure a successful Reuse Plan, a resolution sponsored by the McKinney Act Task Force and passed by BEST ensures that the human service needs of the region are addressed within the context of the economic and job development plan. The resolution states that "the best possible method of property conveyance be collectively determined by BEST or the Redevelopment Authority and the Task Force to ensure that the needs of homeless citizens, the provider organizations and the long-term economic needs of the Community are met" (BEST 1994). Following the completion of the Base Reuse Plan, the task force executed a Memorandum of Agreement (MOA) with the Charleston Naval Complex Redevelopment Authority, outlining the process and responsibilities with regard to the transfer of McKinney Act properties (Charleston Naval Complex Redevelopment Authority 1995d). The MOA specifically allows for site adjustments by the Redevelopment Authority during the long-range implementation of the Base Reuse Plan, relocating McKinney Act uses to achieve compatibility. Such site adjustments may only be conducted provided that a "like facility" is made available to the human/community service provider(s).

A detailed discussion of the McKinney Act Task Force and the McKinney Act Screening Process is provided in the Base Reuse Plan.

Table B-1			
MCKINNEY ACT TASK FORCE: FINAL SELECTION			
Organization (Lead Agency)	Facilities Number	Category	Units (square feet)
Office (N. Chas. Housing Authority)			
All 3 Housing Authorities	FBM 61	Office Space	450
Alston Wilkes Society	FBM 61	Office Space	2,075
COBRA	FBM 61	Office Space	1,575
Chas. Marine Institute	FBM 61	Office Space	1,200
Department Veteran Affairs	FBM 61	Office Space	1,000
Family Services	FBM 61	Office Space	2,000
Hotline	FBM 61	Office Space	
Integrated Services Center			750
Lowcountry Children's Center	FBM 61	Office Space	1,500
Lutheran Social Services	FBM 61	Office Space	1,200
Mental Health Association	FBM 61	Office Space	1,500
My Sisters House, Inc.	FBM 61	Office Space	25,000
SCDHEC	FBM 61	Office Space	1,500
Trident Literacy Association	FBM 61	Office Space	2,500
Trident Literacy Association	FBM 61	Office Space	10,000
Trident United Way	FBM 61	Office Space	1,500
Urban League	FBM 61	Office Space/Classrooms	8,000
W.O.R.K.		Training Space	
Total			61,750
Residential-Single/Duplex (N. Chas. Housing Authority or Low Country Aids)			
Alston Wilkes	750 A&B	Capehart Units	
Florence Crittenton Program	781 A&B	Capehart Units	
	782 A&B	Capehart Units	
	M-10	Capehart Units	
	M-11	Capehart Units	
DVA	743 A&B	Capehart Units	

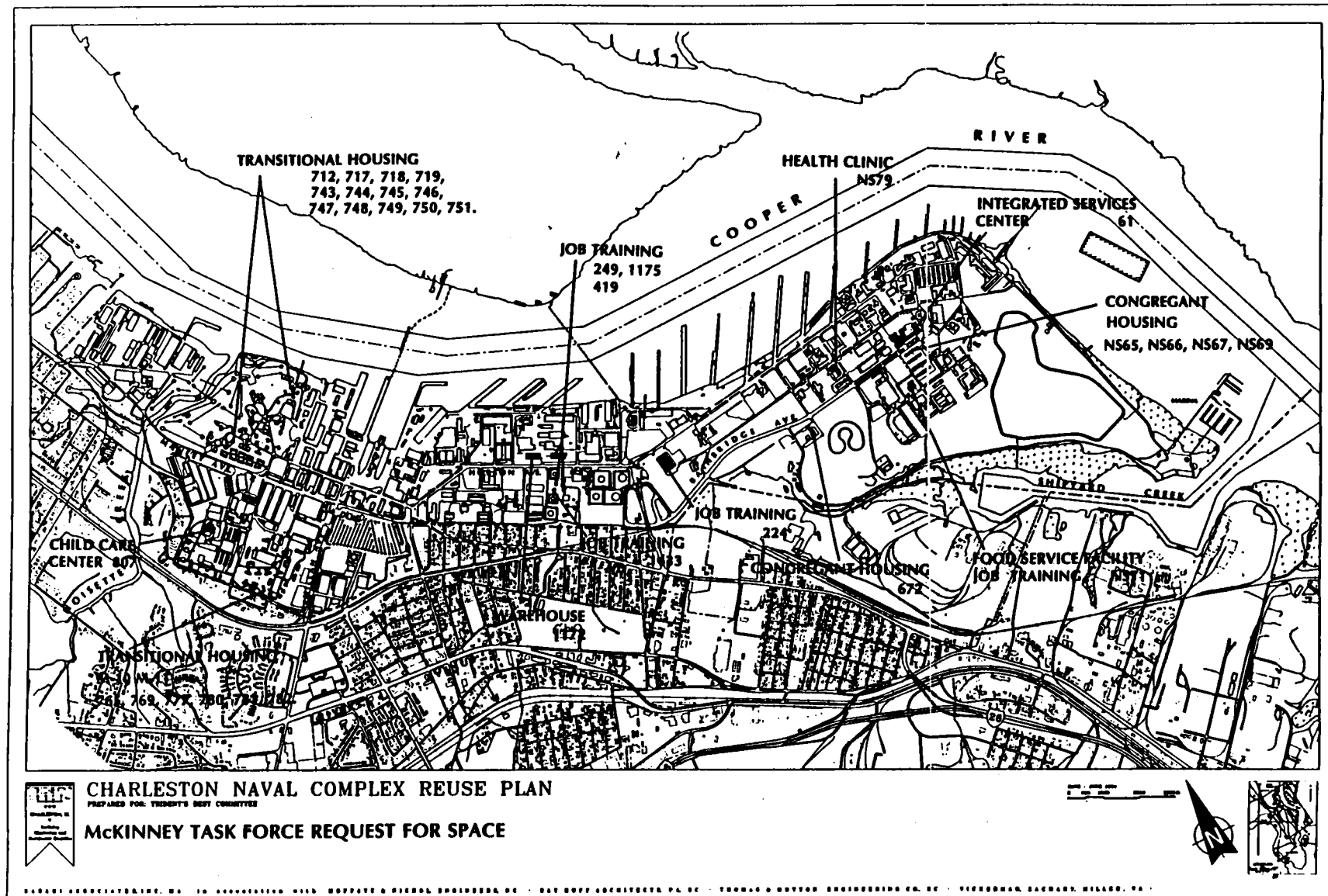
Table B-1			
MCKINNEY ACT TASK FORCE: FINAL SELECTION			
Organization (Lead Agency)	Facilities Number	Category	Units (square feet)
My Sisters House, Inc.	744 A&B	Capehart Units	
	746 A&B		
	747 A&B		
	749 A&B		
	765 A&B	Capehart Units	
	769 A&B	Capehart Units	
	777 A&B	Capehart Units	
	780 A&B	Capehart Units	
Carolina Youth Development Center	745 A&B	Capehart Units	
Carolina Youth Development Center	717 QTRS		
Carolina Youth Development Center	718 QTRS		
Lowcountry AIDS Services	748 A&B	Capehart Units	
United Methodist Relief Center	719 QTRS	Capehart Units	
North Charleston Housing Authority	712 QTRS		
SCDHEC	NS 79		
Total Units			
Residential-Congregant (N. Chas. Housing Authority/Mental Health Association)			
Carolina Youth Development		Congregant Housing	
Department of Veteran Affairs	NS 69		
Eldershelter	NS 65	Congregant Housing	
Mental Health Association	NS 66	Congregant Housing	160 beds
NCICS	NS 71	Food Service Training	
NCICS	672	Congregant Housing	
United Methodist Relief	NS 67	Congregant Housing	
Chas/Dor Community MHC	640	Day Program	
Total Beds			160 beds

Table B-1			
MCKINNEY ACT TASK FORCE: FINAL SELECTION			
Organization (Lead Agency)	Facilities Number	Category	Units (square feet)
Child Care Center (N. Chas. Housing Authority)			
Berkeley Dorch. Development Center	807	Child Care Center	14,117 shared
Carolina Youth Development Center	807	Child Care Center	14,117 shared
Florence Crittenton Program	807	Child Care Center	14,117 shared
Lowcountry Children's Service	807	Child Care Center	14,117 shared
My Sisters House, Inc.	807	Child Care Center	14,117 shared
Total			14,117
Storage/Warehouse (N. Chas. Housing Authority)			
Mental Health Association	672	Storage Space	
United Methodist Relief	672	Storage Space	
Earthworks	249	Job Training	
	419	Job Training	
	1,433	Job Training	
	1,175	Job Training	
WORK/DVA	224		
	1,172		

Prepared by: Ray Huff Architects, P.A. (Sasaki Associates, Inc.)

Date Prepared: 06 June 1994

Source: McKinney Task Force Facilities Subcommittee



C

Notice of Interest and Scoping Notices

- C-1: Notice of Intent to Prepare an EIS for Disposal and Reuse of Naval Base Charleston, Federal Register
- C-2: Change of Public Scoping Meeting for EIS for Disposal and Reuse of Naval Base Charleston, Federal Register, April 26, 1994.
- C-3: Scoping Notice sent by the Navy to local community.
- C-4: Fact sheet.
- C-5: Affidavit of Publication of Public Notice of Scoping Meetings in Charleston Post and Courier.

Department of the Navy**Changed Meeting; Public Scoping Meeting for an Environmental Impact Statement for Disposal and Reuse of Naval Base, Charleston, South Carolina, Has Been Changed**

Pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969 (title 42, United States Code, section 4332, as amended), as implemented by the Council on Environmental Quality Regulations (40 CFR parts 1500-08), and in accordance with the Defense Base Realignment and Closure Act of 1990 (Pub. L. 101-510), the Department of the Navy announced its intent to prepare an Environmental Impact Statement (EIS) to evaluate the environmental effects of disposal and reuse of the Naval Base Charleston, South Carolina, in the Federal Register on Tuesday, April 12, 1994 (59 FR 17350).

The Department of the Navy co-scheduled the scoping meeting with the regular meeting of the Building Economic Solutions Together Team (BEST), who is preparing a Re-Use plan. The BEST Team has rescheduled the date of its meeting from April 26 to May

11; therefore, the scoping meeting for the EIS has been changed accordingly.

The proposed action to be evaluated in the EIS involves the disposal of land, buildings, and infrastructure of Naval Base Charleston for subsequent reuse. The public scoping meeting's purpose is to determine the scope of issues addressed by the EIS and to identify the significant issues related to this action. The Department of the Navy will hold public scoping meetings for this EIS at four different locations: Wednesday, May 11, 1994, beginning at 7 p.m. at the Chicora Neighborhood Center at 2012 Success Street, North Charleston, South Carolina; Wednesday, May 11, 1994, beginning at 7 p.m. at the North Charleston City Hall, 4900 LaCross Road, North Charleston, South Carolina; Thursday, May 12, 1994, beginning at 7 p.m. at the Berkeley County Office Building, 223 North Live Oak Drive, Moncks Corner, South Carolina; and Thursday, May 12, 1994, beginning at 7 p.m. at the District 2 Administrative Office Building at 102 Greenwave Boulevard, Summerville, South Carolina. These meetings will be advertised in local and regional newspapers. Please direct any questions to: Commander, Southern Division, Naval Facilities Engineering Command, 2155 Eagle Drive, North Charleston, SC 29419-9010, Attn: William Sloger, telephone (803) 743-0797.

Dated: April 21, 1994.

Lewis T. Booker, Jr.,

LCDR, JAGC, USN, Federal Register Liaison Officer.

[FR Doc. 94-10037 Filed 4-25-94; 8:45 am]

BILLING CODE 2610-AE-M



DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR. P.O. BOX 190010
NORTH CHARLESTON, S.C. 29419-9010

PLEASE ADDRESS REPLY TO THE
COMMANDING OFFICER, NOT TO
THE SIGNER OF THIS LETTER

NOTICE

Pursuant to recommendations of the 1993 Defense Base Closure and Realignment Commission, as approved by Congress, the Naval Base Charleston and the Naval Shipyard Charleston, South Carolina will be closed. The Navy will prepare an environmental impact statement (EIS) for the disposal and reuse of the Naval Base Charleston complex. The Reuse/Redevelopment Plan for the Naval base Charleston complex is currently being prepared by the Building Economic Solutions Together (B.E.S.T.) Committee and its consultants.

Potential socioeconomic and environmental consequences of the proposed action will be evaluated in compliance with the National Environmental Policy Act of 1969. In accordance, the Department of the Navy requests participation of agencies and individuals interested and/or potentially impacted by the proposed action.

On April 26, 1994, the Department of the Navy published a Notice of Intent to prepare an Environmental Impact Statement on the proposed disposal and reuse action in the Federal Register. The Department of the Navy has hired a consulting firm, Ecology and Environment, Inc. to prepare the EIS. All significant issues of concern will be addressed in the Report.

Comments on the scope of the EIS and/or any additional issues of concern are requested and will be accepted through June 10, 1994. In addition, four public scoping meetings will be held:

Wednesday, May 11, 1994
7:00 - 9:00 p.m.
Chicora Neighborhood Community
Center
Live Oak; 2012 Success Street
North Charleston, SC

Wednesday, May 11, 1994
7:00 - 9:00 p.m.
North Charleston City Hall
Council Chambers
4900 LaCross Road
North Charleston, SC

Thursday, May 12, 1994
7:00 - 9:00 p.m.
Berkeley County Office Bldg.
Assembly Room
223 North Live Oak Drive
Moncks Corner, SC

Thursday, May 12, 1994
7:00 - 9:00 p.m.
Dorchester County District 2
Admin. Offices Boardroom
102 Greenwave Blvd.
Summerville, SC

Page 2

Request to comment at the scoping meeting will be received at the sign-in table prior to the beginning of the meeting. Written comments may be provided in addition to or in lieu of, oral comments at the scoping meeting. Please send written comments by June 10, 1994 to:

Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, SC 29419-9010
Attn: William Sloger
(803) 743-0797

Detailed information which will be utilized to assess the impacts of the proposed action may be requested from your agency/organization by Ecology and Environment, Inc. during the site visits and data collection phase of the EIS which is scheduled for this spring. Your assistance will be greatly appreciated.

FACT SHEET

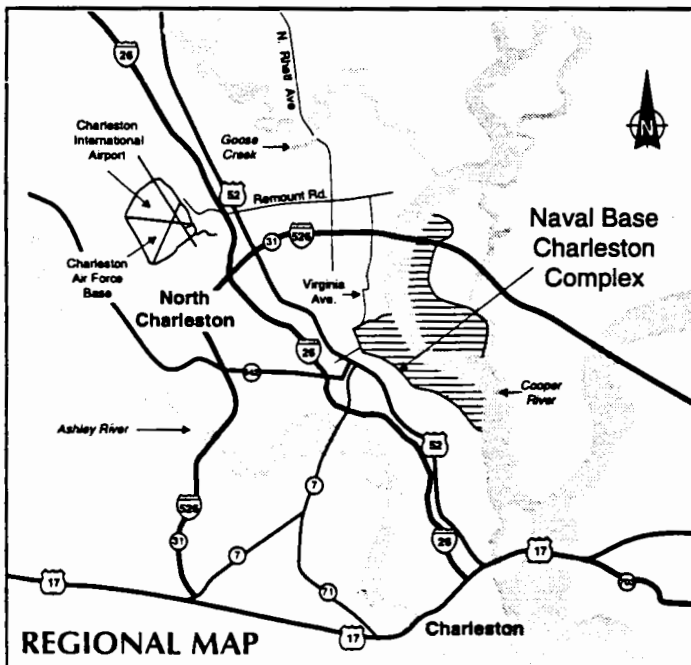
ENVIRONMENTAL IMPACT STATEMENT FOR DISPOSAL AND REUSE OF CHARLESTON NAVAL SHIPYARD AND NAVAL STATION CHARLESTON NORTH CHARLESTON, SOUTH CAROLINA

PROJECT DESCRIPTION

In compliance with the Defense Base Closure and Realignment Act of 1990, Naval Shipyard (NSY) Charleston and the Naval Station (NS) Charleston will be closed. Closure of these facilities, collectively referred to as the Charleston Naval Base Complex, was recommended by the 1993 Defense Base Closure and Realignment Commission and approved by Congress in September of 1993 as a way to remove excess Naval shipyard and berthing capacity while maintaining the overall military value of the remaining installations.

A reuse committee, known as the Building Economic Solutions Together (B.E.S.T.) Committee, has been formed by the local community to develop a viable reuse plan for the property declared excess by the Navy. The B.E.S.T. Committee is currently developing the reuse plan for the Naval Complex property with a projected completion date of May 1994.

The Navy will prepare an Environmental Impact Statement (EIS) to evaluate the environmental impacts of the preferred reuse scenario. The Navy will also consider the environmental impacts of other reuse alternatives developed by the B.E.S.T. Committee. However, the Navy will not consider a no-action alternative to disposal and reuse because the closures have been mandated by federal law.



PUBLIC SCOPING MEETINGS

Wednesday May 11, 1994 7:00 pm
Chicora Neighborhood Center
and
North Charleston City Hall

Thursday May 12, 1994 7:00 pm
Berkeley County Office Building
and

Dorchester County District 2 Administrative Building

BACKGROUND

In November 1990, Congress enacted the Defense Base Closure and Realignment Act of 1990. To achieve operational efficiency in the face of declining military budgets, Congress established the Defense Base Closure and Realignment Commission to study and recommend realignment, consolidation, and closure of military bases, reserve centers, technical centers, and other facilities to achieve long-term cost savings. These closures and realignments are based on a force-structure plan and selection criteria proposed by the secretary of defense.

The commission submitted a list of recommendations to Congress in 1991 and 1993; another list of closure and realignment recommendations will be submitted in 1995. Closure of NSY Charleston and NS Charleston was included in the 1993 list of recommendations.

SITE LOCATION

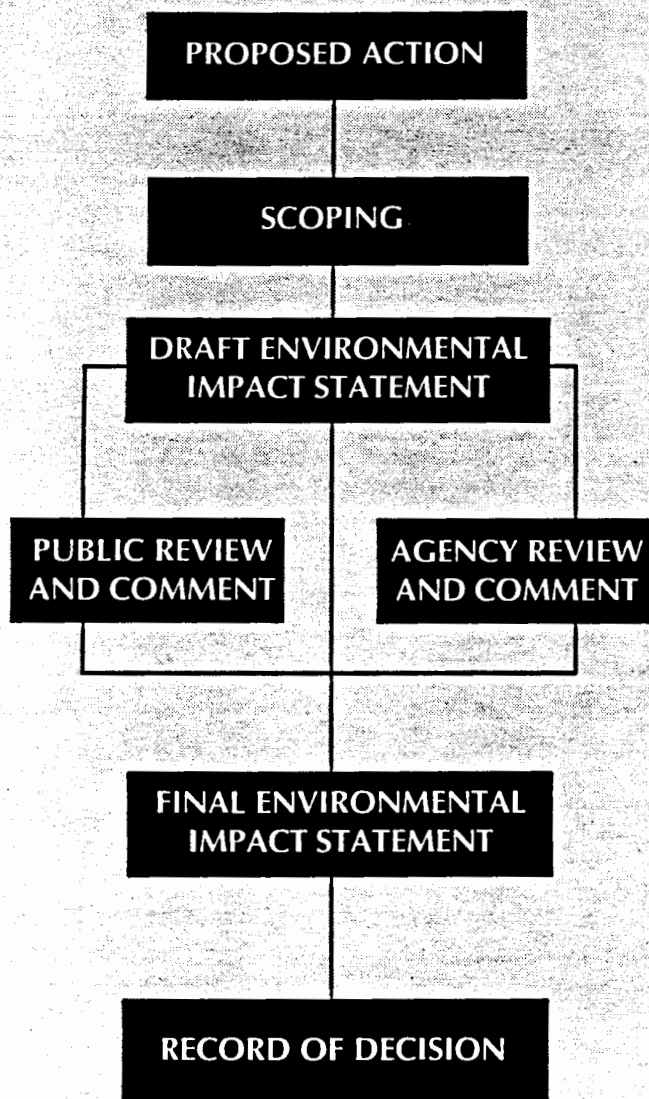
NSY Charleston and NS Charleston are located primarily in Charleston County, South Carolina. A small portion of the installation, the dredge disposal area, is situated across the Cooper River in Berkeley County. The majority of the installation is located east of Sprill Avenue and west of the Cooper River in the City of North Charleston.

The Naval Complex is approximately 1,575 acres and includes about 2.3 million square feet of industrial space, 1.8 million square feet of warehouse space, 2.2 million square feet of administrative space, 86 residences, 19 residential barracks, 152 marina slips, 23 piers, five dry dock facilities, and a wide range of recreational facilities.

ENVIRONMENTAL IMPACT STATEMENTS

Under the National Environmental Policy Act (NEPA), federal agencies are required to prepare an EIS for major federal actions. An EIS evaluates the environmental impacts of a federal action and alternatives that would avoid or minimize adverse impacts. Potential impacts to the natural environment, including wetlands and air quality, as well as potential impacts to the socioeconomic environment, including population, employment, housing, and schools, are considered. The purpose of NEPA is to ensure that federal agencies consider the environmental impacts of their decisions along with social and economic impacts and that interested agencies and the public have opportunities for participation. Key issues to be discussed in the EIS will be economic development, fiscal impacts, coastal zone management, water quality, land use, infrastructure and utilities, potential contamination, cultural resources, wetland resources, and transportation.

EIS PROCESS



PUBLIC PARTICIPATION

NEPA provides opportunities for public involvement in the EIS process. At the scoping meetings, the public is requested to provide input into the "scope" of issues to be addressed in the EIS. Issues of concern should be stated during the public comment period of the scoping meeting, or provided in writing. Comments should clearly describe specific issues or topics that an individual believes the EIS should address. The time and location of the scoping meetings is shown on the front of this fact sheet.

After the Draft EIS is prepared, it will be made available for public and government agency review. The public is requested to review the Draft EIS and provide comments on the study in writing or during a public hearing. The date and time of the public hearing will be announced in the local newspapers. The Navy will consider the comments and address them in the Final EIS. The Final EIS will also be made available to the public. When the Navy has reached a final decision on the proposed action, it will prepare a Record of Decision, that will be published in the local newspapers.

CONTACT

Comments and questions should be addressed to:

Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, SC 29419 - 9010

Attn: William Sloger

Comments must be received by June 10, 1994.

AFFIDAVIT
OF
PUBLICATION

The Post and Courier

State of South Carolina

County of Charleston

Personally appeared before me
the undersigned advertising Clerk of the
above indicated newspaper published
in the City of Charleston, County and
State aforesaid, who, being duly sworn,
says that the advertisement of

(copy attached)

appeared in the issues of said newspaper

on the following day(s):

April 28, 29, 30, May 1, 2, 3, 4, 1994

Subscribed and sworn to

before me this 4 day

of May

A.D. 19 94

Kay Kramer
(Advertising clerk)

Notary Public
NOTARY PUBLIC FOR SOUTH CAROLINA
My Commission expires June 18, 2000

REVISED NOTICE

DEPARTMENT OF
THE NAVY
INVITES THE PUBLIC TO A
SCOPING MEETING FOR ITS
ENVIRONMENTAL IMPACT
STATEMENT (EIS) ON
DISPOSAL AND REUSE OF THE
NAVAL BASE CHARLESTON,
SOUTH CAROLINA

Pursuant to recommendations of
the 1993 Defense Base Closure and
Realignment Commission, as ap-
proved by Congress, the Naval
Base Charleston, South Carolina
will be closed. The Navy will pre-
pare an Environmental Impact
(EIS) for the disposal and reuse of
Naval Base Charleston. The
Reuse/Redevelopment Plan for the
Naval Base Charleston complex is
currently being prepared by the
Better Economic Solutions Togeth-
er (B.E.S.T.) Committee and its
consultants.

The Navy requests comments for
the purpose of determining the
scope of issues to be addressed in
the EIS, and for identifying signifi-
cant environmental issues related
to the disposal and reuse of Naval
Base Charleston property. The Na-
vy intends to dispose of the excess
property for reuse by other local,
state, and/or federal government
agencies. All interested citizens are
invited to attend one of the follow-
ing public scoping meetings:

Wednesday, May 11, 1994
7:00 - 9:00 pm
Chicora Neighborhood Community
Center
Live Oak; 2012 Success Street
N. Charleston, SC

Wednesday, May 11, 1994
7:00 - 9:00 pm
North Charleston City Hall
Council Chambers
4900 LaCross Road
North Charleston, SC

Thursday, May 12, 1994
7:00 - 9:00 pm
Berkeley County Office Bldg.
Assembly Room
223 North Live Oak Drive
Moncks Corner, SC

Thursday, May 12, 1994
7:00 - 9:00 am
Dorchester County District 2
Administrative Offices Boardroom
102 Greenwave Blvd.
Summerville, SC

These meetings will be held in con-
junction with Public Meetings
scheduled by The BEST Commit-
tee regarding the ongoing reuse
planning effort. Navy representa-
tives will be available at this meet-
ing to receive comments from the
public regarding issues of concern.
A brief presentation will precede
the request for public comments.
Written comments are also wel-
come. The Navy will provide com-
ment cards at the scoping meeting.
Prepared statements will also be
accepted. Otherwise written state-
ments or questions regarding the
scoping process should be received
no later than 10 June 1994 ad-
dressed to:

Commander, Southern Division
Naval Facilities
Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, SC 29419-9010
Attn: William Sloger
(803) 743-0797

D

Building Inventory

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
2	J-43	SHIPFITTER SHOP, STRUC & PIPING GROUP OFFICES	63448	1906	Unknown	PI	
3	J-42	INSIDE MACHINE SHOP	151824	1905	Peeling		21 ft ACM removed in 1991
4	G-43	ADMIN. OFFICES, ENGINEERING, N. ENGINEERING	96000	1918	Peeling	PI	
5	H-42	WOODWORKING SHOP	68505	1904	Good Cond	PI	
6	H-43	FORGE SHOP AND PROPELLER REPAIR SHOP	24168	1906	Unknown	Suspect PI	
7	H-44	COMPTROLLER DEPT. AND IRM	54060	1908	Peeling		PI removed in 1992
8	G-43	ADMIN. OFFICES, NAVSTA TELEPHONE OFFICE,	101080	1906	Peeling	FI	
9	G-39	TEMPORARY SERVICE SHOP	74612	1906	Chipped	YES-nonspecific	Survey mentions 40 sq yds ACM
10	G-39	N. ENGINEERING DEPT.	31620	1918	Poor Cond	PI	
11	J-37	MISC. SHOPS & TEST EQUIP. STORAGE	18083	1918	Fair Cond	PI - 350 feet	
13	G-38	QUALITY ASSURANCE OFFICE & SUPPLY ADMIN.	52265	1906			
21	H-36	STORAGE (SHOP 99)	720	1919	Good Cond	Suspect ACM	
25	E-40	TRANSPORTATION SHOP AND GARAGE	27453	1940	Fair Cond	Suspect ACM	
26	K-38	FIELD OFFICE	782	1918	Peeling		
30	F-41	PW BUILDING TRADES AND ADMIN. OFFICES	29036	1919	Good Cond	Suspect ACM	Some ACM removed
31	F-41	STORAGE FOR POWER PLANT	2599	1919	Peeling	FI	
32	F-41	CENTRAL POWER PLANT	64269	1909	Good Cond	YES-nonspecific	Abatement underway
35	H-43	WELDING SCHOOL AND WELDING ENGINEERING	33111	1913	Peeling	CT	
42	E-32	FLEET MOTOR POOL	924	1937	Good Cond		Exterior siding is transite board
43	H-41	CENTRAL TOOL SHOP & SERVICE GROUP OFFICES	54489	1941		PI	
44	G-42	SUPPLY & SHOP STORES	57050	1941	Peeling	PI	
46	J-41	COMPRESSOR AND SALT WATER PUMPHOUSE	5347	1941	Chipped	PI	
53	F-43	FRESH WATER STORAGE UNDERGROUND			Good Cond		
54	F-43	FRESH WATER PUMPHOUSE	1352	1939	Peeling	Suspect ACM	
55	M-42	COLLIMATION FACILITY	3108	1941	Unknown		
56	J-42	OUTSIDE MACHINE SHOP	42000	1937	Peeling	Suspect ACM	
57	G-42	RIGGER SHOP	25368	1940	Unknown		Transite panels removed
58	F-43	DISPENSARY, INDUSTRIAL MEDICINE AND	18326	1940	LBP abated	PI	
59	J-43	SHEETMETAL SHOP AND BOILER SHOP	67825	1940	Unknown	Suspect ACM	
62	L-41	OPERATIONS PROJECT OFFICES & ENGINEERING	48088	1942	Peeling	Suspect ACM	
63	H-42	YARD CAFETERIA NO. 1	39147	1942	Peeling	Suspect ACM	
68	G-30	BATTERY SHOP (ELECTRIC SHOP)	69864	1942	Fair Cond	Suspect ACM	
69	G-31	STOREHOUSE, RECEIVING AND SHIPPING	82533	1942	Chipped	Suspect ACM	
74	K-42	STOREHOUSE	14705	1942	Peeling	PI	Pipe Insulation is damaged
75	K-38	SUBSTATION	2304	1942	Fair Cond	Suspect ACM	
76	D-40	HUMAN RESOURCE & SAFETY/ENVIRONMENTAL OFFICE	39776	1942	Unknown	ACM in Bsmt	Basement access requires respirator
77	H-41	SUBSTATION, RESTROOM, SHIP SUPT OFFICE	9531	1942	Good Cond	Suspect ACM	Suspect ACM is in good condition
78	F-47	WATER TANK (ELEVATED)			Unknown		
79	J-35	REPAIR SHOP AND QUALITY ASSURANCE OFFICE	85327	1943	Chipped	ACM present	Type of ACM not identified in report
80	H-39	REFUELING FACILITY	54037	1943	Peeling	Suspect ACM	Paint peeling from roof
84	H-40	SUBSTATION, DRYDOCK NO. 2		1942	Peeling		
85	J-35	SUBSTATION, PIERS 317D TO 317E		1942	Peeling	Suspect ACM	
88	J-39	SALT WATER PUMPHOUSE No. 2	792	1942	Unknown		
91	J-33	SUBSTATION		1943	Peeling	Suspect ACM	
93	J-39	RESTROOM		1942	Unknown	ACM Found	Type of ACM not identified in report
94	G-33	SUBSTATION		1943	Unknown	Suspect ACM	
95	H-31	SUBSTATION & STORAGE		1943	Peeling	Suspect ACM	
96	H-30	SUBSTATION & STORAGE	1242	1943	Fair Cond		
97	G-37	AIR COMPRESSOR HOUSE	3935	1943	Good Cond	Suspect ACM	
99	J-41	SALT WATER PUMPHOUSE	378	1943	Unknown		
101	H-34	MATERIAL AND TOOL STOREHOUSE	8931	1919	Chipped	Suspect ACM	
122	F-32	TRANSPORTATION MOTOR POOL (DISPATCHER)	1029	1945	Unknown	Suspect ACM	
123	J-23	BOILER HOUSE	4932	1947	Peeling	Suspect ACM	
124	H-28	SUBSTATION	1000	1947	Unknown	Suspect ACM	
125	H-23	SUBSTATION	1000	1947	Chipped		
126	K-20	SUBSTATION	252	1947	Chipped	Suspect ACM	
127	J-28	SALT WATER PUMPHOUSE	744	1947			
136	G-42	CONDENSATE STORAGE AND PUMPHOUSE	120	1944	Fair Cond	Suspect ACM	
137	K-44	OXYGEN CHARGING STATION	1764	1945	Good Cond		
143	L-37	AUTOMATIC TIDE GAUGE HOUSE (ABANDONED)	30	1942	Door Chipped		
147	H-42	STORAGE (SHOP 06)	532	1949	Chipped		
168	J-33	STOREHOUSE	384	1949	Unknown		
174	F-36	SWITCH HOUSE (ELEC.)	264	1942	Chipped		
177	F-40	ELECTRIC AND ELECTRONICS SHOPS	221754	1955	Good Cond	PI	Pipe insulation is extensively damaged
178	E-39	STEAM FLOW METER HOUSE	80	1954	Unknown		
187	G-37	MODULE MAINTENANCE FACILITY	44281	1962	Unknown	PI	
188	G-37	MECHANICAL EQUIPMENT BUILDING FOR BLDG. 187	782	1962			
189	G-37	MECHANICAL & ELECTRIC EQUIP BLDG FOR BLDG 187	1256	1962			
190	J-34	RADCON TRAINING & OFFICES	24960	1963	Good Cond	PI	Ceiling tile is Suspect ACM
194	J-39	PAINT SHOP STORAGE (SHOP 71)	840	1964	Chipped		
195	J-38	RIGGER SHOP SERVICE BUILDING, NRRO &	13726	1964	Good Cond	PI, FI, TC	Ceiling tile is Suspect ACM
196	K-19	250,000 GAL FRESH WATER ELEVATED TANK					
197	J-37	PUMPWELL, DRYDOCK NO. 5	16746	1964	Unknown	Suspect ACM	Some ACM abated in 1990
199	F-36	TRAINING BLDG. (COCHRANE HALL)	41196	1970	Unknown	PI	Doors are ACM
209	E-42	EMPLOYEE OUTPLACEMENT CENTER	7500	1985	Good Cond	None	Floor Tile is Suspect ACM
210	A-45	CHLORINATOR BUILDING, FRESH WATER	156	1966	Unknown		
211	E-50	CHLORINATOR BUILDING, FRESH WATER	156	1966	Fair Cond		
212	K-43	ABRASIVE BLASTING FACILITY	7200	1966	Chipped		
216	G-37	ELECTRICAL SHOP CABLE WAREHOUSE	14400	1968	Unknown		Floor Tile and Mastic are Suspect ACM
217	G-38	NEUTRON GENERATOR HOUSE	370	1968			
218	H-35	MISSILE ORDNANCE SYSTEMS SHOP(SHOP 67)	39000	1969	Good Cond	PI suspected	
221	K-42	PIPE SHOP CLEANING PLANT	4370	1970	Unknown	Suspect ACM	
222	G-41	DRYDOCK SUPPORT REPAIR FACILITY	25940	1971	Chipped	Suspect ACM	Some PI ACM removed in 1980
223	L-43	PAINT SHOP	32853	1973	Good Cond	Suspect ACM	
226	J-42	PLATING PLANT AND PUMP, VALVE & HYDRAULICS	32938	1976	Good Cond	PI	Scheduled for removal
227	E-42	EMPLOYEE SERVICES ASSOCIATION	864	1982			FT is Suspect ACM but in good cond.
228	L-42	PIPE INSULATION FACILITY	6260	1976	Good Cond	Suspect ACM	Ceiling Tiles
230	H-39	CANTEEN NO. 2	903	1959	Good Cond		
231	J-36	CANTEEN NO. 3	700	1959	Good Cond		
232	F-32	TRAINING AIDS STORAGE & ADMINISTRATION	1536	1975	Unknown		
234	H-44	ENGINEERING MANAGEMENT BUILDING	166656	1974		Suspect ACM	
235	G-35	MAPP GAS - CO2 FACILITY	1380	1977	Good Cond		
236	H-37	OPERATIONS CENTER & PIPEFITTING SHOP	145768	1982	Fair Cond	Suspect ACM	Ceiling Tiles
237	G-37	SHIPS STORAGE & ENGINEERING TEST FACILITY	22530	1982	Unknown	Suspect ACM	Ceiling Tiles and floor tile
238	H-36	REPAIR EQUIPMENT BUILDING	1600	1980	Unknown		
239	L-42	RESPIRATOR CARE FACILITY	20402	1983	Worn	Suspect ACM	Large abatement job, 1989 - 1991
240	G-32	CARWASH FACILITY	600	1984			
241	G-34	CRANE MAINTENANCE BUILDING	72000	1987		Suspect ACM	
242	G-33	AUTOMOBILE MAINTENANCE BUILDING	46879	1987	Worn		
246	E-26	HAZ WSTE STOR AND TRANSIT FACILITY	6650	1986			

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
247	J-38	WATERFRONT SERVICE SUPPORT BUILDING	12200	1987		Suspect ACM	Ceiling Tiles
248	G-35	SUPPLY ADMINISTRATIVE BUILDING	3600	1985	Unknown	Suspect ACM	Ceiling Tiles
249	E-33	PUBLIC WORKS MAINTENANCE	4040	1989			Floor tiles are Suspect ACM
250	H-40	WATERFRONT SERVICE SUPPORT BUILDING	12200	1991	Unknown		Paint tested in 1991. Results unknown
252	H-34	TRAINING FACILITY	2400	1990			
254	H-35	COMPONENT INSPECTION FACILITY	1920	1991			
255	G-32	INDUSTRIAL LOGISTICS FACILITY	43000	1992			
256	H-36	SHIPWORK STAGING/STORAGE BLDG.	5640	1992			
301	H-41	DRYDOCK NO. 1	53150		Unknown	PI	Scheduled for Removal
302	G-40	DRYDOCK NO. 2	64716		Unknown		
303	H-31	DRYDOCK NO. 3	36100		Unknown		
304	H-30	DRYDOCK NO. 4	36100		Unknown		
305	J-37	DRYDOCK NO. 5	15264		Unknown	PI	Some ACM removed in 1991
314	K-40	INDUSTRIAL PIER (D)	9237				
333	L-40	INDUSTRIAL PIER (C) (END OF 352)	36034		Unknown	Suspect ACM	Pipe insulation may be ACM
342	L-42	SUBSTATION	303		Unknown		Floor tile is Suspect ACM
351	H-40	QUAY WALL (E)	4226		Peeling		
352	K-41	REPAIR WHARF	5409		Unknown		
353	L-41	BULKHEAD, BUILDINGWAYS			Unknown		
354	J-30	BULKHEAD, DRYDOCK NO. 4					
355	J-41	BULKHEAD, PIERS 352 TO 314			Unknown	Suspect ACM	
356	J-31	BULKHEAD, DRYDOCKS 3 TO 4					
374	H-29	DREDGE BOAT HOUSE	576		Unknown		
375	J-29	DREDGE MOORING PIER	960		Unknown		
376	R-36	PIER AT CLOUTER CREEK DISPOSAL AREA	2880		Unknown		
377	S-36	BOOSTER PUMPHOUSE AT CLOUTER CREEK		1958	Good Cond		
378	J-29	TIDE GAUGE HOUSE	12	1985			
380	H-28	HOSE HOUSE FOR SHIP TO SHORE SEWAGE	2985	1979	Peeling	Suspect ACM	CT
381	F-30	STORAGE/ADMIN. FACILITY (PEST CONTROL)	2000	1981		Suspect ACM	CT
384	E-43	STORM WATER PUMPING STATION		1981	Good Cond		
391	F-42	STORAGE BUILDING	1875	1981	Unknown	Suspect ACM	CT
400	G-43	PUBLIC WORKS FACILITY	53347	1993			Roofing materials are Suspect ACM
414	J-41	FIRE PROTECTION PUMPING STATION	528	1966	Fair Cond		
417	N-15	SALT WATER PUMPHOUSE	1519	1988	Peeling		
419	E-33	SPEC SVC ISSUE OFFICE	1200	1990			
420	F-41	MAINTENANCE SHED					
454	H-38	SUBSTATION	312	1964	Good Cond		
455	H-38	SUBSTATION	1682	1964	Good Cond		
456	J-38	SUBSTATION	1595	1964	Good Cond		
457	J-41	SWITCHGEAR, SUBSTATIONS & PROD OFFICES	4910	1969	Good Cond	PI, FI	ACM is damaged
458	L-39	SWITCHGEAR AND SUBSTATION	874	1965	Worn	PI	
459	H-43	SWITCHING SUBSTATION	170	1974	Good Cond		
460	K-42	SWITCHING SUBSTATION	170	1974	Chipped		
466	G-30	SWITCHING SUBSTATION		1987			
482	L-50	RAILROAD BRIDGE TRESTLE			Unknown		
513	E-43	RAILROAD TRACK SCALES			Unknown		
560	J-49	COAL STORAGE YARD	6005		Unknown		
622	L-50	HIGHWAY BRIDGE	389				
715	F-33	DEEP WELL PUMPHOUSE	297		Cracked		
716	F-33	DEEP WELL		1943	Cracked		
808	K-43	STORAGE BUILDING	600	1975	Unknown		
809	H-31	SHIPWORK SUPPORT BLDG.	4920	1988			
824		ELECTRICAL STORAGE SHED	6850	1986			
903	D-24	STORAGE BUILDING	3600	1983		BC	
904	E-41	CANTEEN NO. 6 (TRAILER)	720	1985	Good Cond		Floor tiles Suspect ACM- Damaged
910	B-45	DETENTION POND	9722				
1024	H-37	PIPE SHOP STAGING/STORAGE	10960	1915	Chipped	PI	220 linear feet
1035	F-39	PAINT SHOP	1116	1951	Peeling		
1119	J-41	OPERATIONS SUPPORT OFFICES (WATERFRONT)	6048	1928	Peeling	PI, FI	
1141	F-42	SHIPYARD SECURITY OFFICE	3950	1942	Good Cond		Floor tile is ACM, but in good cond.
1171	G-35	MATERIAL & EQUIPMENT STORAGE	28189	1972	Chipped		
1173	G-35	STORAGE AND OFFICE	32575	1972	Peeling	Suspect ACM	Exterior paint is peeling
1174	H-32	TRAINING AND ADMIN. OFFICES	61079	1972	Unknown	Suspect ACM	
1175	F-32	SHOP STORES & GROUNDS MAINTENANCE BLDG.	26214	1972	Peeling		Floor tile is Suspect ACM
1178	F-39	STORAGE	16531	1942	Peeling		Floor tile is Suspect ACM
1190	H-30	COMPRESSOR HOUSE	1656	1943	Good Cond		Siding is Suspect ACM
1193	F-32	OFFICE	5272	1942	Good Cond		FT is Suspect ACM, transite removed
1241	F-32	STORAGE	768	1946	Unknown	Suspect ACM	Exterior ACM siding removed
1245	J-37	WOODWORKING SHOP (FIELD)	663	1942	Peeling		
1248	F-41	STORAGE (SHOP 07)	690	1949	Good Cond		
1267	G-31	RECEIVING AND SHIPPING TRANSIT SHED	120	1969	Fair Cond		
1269	F-41	STORAGE (SHOP 03)	468	1943	Good Cond	Suspect ACM	Some ACM removed in 1989
1271	H-25	GARBAGE HANDLING (CONTAINER CLEANING)	1056	1954	Unknown		
1275	L-42	ABRASIVE BLAST SLAB	500	1942	Unknown		
1277	H-33	STOREHOUSE	11482	1966	Unknown		
1278	H-30	BATTERY PROCESSING SLAB	90	1942	Worn	Suspect ACM	PI and CT are in poor cond.
1292	J-42	TIME CLOCK STATION NO. 1	1221	1963	Good Cond		
1295	G-42	STEAM CONDENSATE STORAGE TANK			Good Cond		
1297	G-39	STORAGE SAND BINS (SHOP 81)	1932	1934	Chipped		
1298	G-40	BRICK STORAGE (SHOP 41)	1372	1944	Poor Cond		Unknown quantity of ACM removed in 1980
1299	G-40	SHOP STORES (SHOP 41)	451	1942	Worn		
1314	G-39	MATERIAL STORAGE (SHOP 81)	999	1940	Poor Cond		
1316	F-30-33	TOOL STORAGE (SHOP 07)	500	1944	Chipped		
1317	H-39	CRANE OPERATIONS BLDG.	1870	1936	Peeling		Floor tile is ACM
1364	G-36	SAND HOPPER	400	1949	Good Cond		
1365	G-36	SAND HOPPER	400	1949	Good Cond		
1378	G-42	PURE WATER TANK STORAGE SLAB	5	1961			
1382	G-43	F. W. VALVE HOUSE	55	1958	Good Cond		
1388	H-29	OFFICE (DREDGE OPERATIONS)	119	1959			
1393	G-36	SAND HOPPER	400	1962			
1394	F-42	PURE WATER FACILITY - TANKS (2)				Suspect ACM	PI suspected, but in good cond.
1400	F-35	RESTROOM AND PRESS BOX	195	1985	Good Cond		
1405	F-35	BASEBALL FIELD (FLETCHER FIELD)	62500	1985	Unknown		
1423	VAR LOC	PORTABLE SERVICE SOUND	77	1963	Peeling		
1426	H-34	CONTAMINATED WASRE STORAGE	960	1964			
1433	VAR LOC	PORTABLE FIELD OFFICE	720	1963	Unknown		Floor tile is ACM
1434	VAR LOC	PORTABLE FIELD OFFICE	720	1963	Good Cond		
1435	VAR LOC	PORTABLE FIELD OFFICE	720	1963	Unknown		Flooring is Suspect ACM
1436	VAR LOC	PORTABLE FIELD OFFICE	760	1965	Good Cond		Floor tile is Suspect ACM
1443	E-1	TIME CLOCK STATION NO. 8	925	1966	Peeling		

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
1450	L-42	SAND HOPPERS	300	1967			
1453	J-44	CLEANING AND PRESERVATIVE PLANT	864	1954	Fair Cond		
1454	G-39	EQUIPMENT STORAGE	1440	1934			
1700	J-43	SENTRY HOUSE	36		Unknown		
1711	H-35	INCINERATOR	400	1969	Unknown		
1712	H-40	STORAGE	480	1968		Suspect ACM	Ceiling tiles and pipe insulation
1713	VAR LOC	PORTABLE FIELD OFFICE	720	1968	Chipped		Non-friable glue on back of CT
1717	G-41	FLUSHING EQUIPMENT STORAGE	720	1968	Good Cond		FT is suspect ACM, but in good cond.
1723	K-44	BOILER TUBE AND FIREBRICK STORAGE SHED	1920	1970	Good Cond	PI	Floor tiles and mastic suspect ACM
1734	NOT	VACANT	200	1968			
1736	H-37	RESTROOM	1664	1970	Good Cond	Friable ACM	Type of ACM is not specified
1737	J-34	RESTROOM	2100	1970	Good Cond	Friable ACM	Type of ACM is not specified
1745	F-41	TIME CLOCK STATION NO. 9	912	1970	Peeling		Transite panels present
1746	H-38	STORAGE SHED	800	1971	Unknown	Suspect ACM	FT and CT are suspect ACM
1747	VAR LOC	PORTABLE SERVICE SOUND HUT	77	1970	Fair Cond	Suspect ACM	Floor and ceiling tiles
1760	H-35	CONTAMINATED STORAGE	768	1968			
1761	J-19	SEWER PUMPING STATION NO. 1		1971	Unknown		
1762	M-18	SEWER PUMPING STATION NO. 2		1971	Peeling		
1763	H-20	SEWER PUMPING STATION NO. 3		1971	Peeling		
1764	F-34	SEWER PUMPING STATION NO. 4		1971	Good Cond		
1765	E-38	SEWER PUMPING STATION NO. 5		1971	Peeling		
1766	F-39	SEWER PUMPING STATION NO. 6		1971	Unknown		
1767	F-41	SEWER PUMPING STATION NO. 7		1971	Unknown		
1768	N-46	SEWER PUMPING STATION NO. 8		1971	Peeling		
1769	R-49	SEWER PUMPING STATION NO. 9		1971	Chipped		
1770	D-18	SEWER PUMPING STATION (BLDG. 661)			Worn		
1771	F-32	SENTRY HOUSE	28		Unknown		
1772	H-34	SENTRY HOUSE	28		Good Cond		
1773	F-39	SENTRY HOUSE	28		Peeling		
1774	H-33	SENTRY HOUSE	28		Unknown		
1775	G-38	SENTRY HOUSE	28		Unknown		
1782	H-39	LUNCH SHELTER	1536	1972	Good Cond		
1783	J-41	SEWAGE PUMPING STATION		1972	Chipped		
1784	H-42	INDUSTRIAL WASTE TREATMENT FACILITY	540	1972			
1793	J-23	SUBSTATION BUILDING	1248	1974	Chipped		
1797	H-29	ACID WASTE TREATMENT FACILITY		1975			
1798	H-45	FLAG POLE AT BUILDING NO. 234			Unknown		
1801	J-42	PIERMASTER BUILDING	672	1974			
1802	J-39	PIERMASTER BUILDING	672	1974			
1803	M-51	CHLORINATION STATION	156	1982	Good Cond		
1804	E-29	CHLORINATION STATION	156	1982	Peeling		
1805	R-49	ANALYZER STATION		1982			
1824	F-30	HAZARDOUS/FLAMMABLE STORAGE FACILITY	17810	1990			
1836	F-31	STORAGE (SHOP 07)	4000	1981	Worn		
1838	C-22	GENERAL STORAGE	2400				Shed at north end of site may have LBP
1855	G-38	CANTEEN NO. 4	560		Unknown		
1950	G-42	SENTRY HOUSE			Unknown		
2508		MAINTENANCE SHOP	4383	1984		PI, BC	Some has been removed
2554		SUBSTATION	311	1984			
3902	G-27	PAINT AND OIL STOREHOUSE	1200	1942	Unknown		
3909	J-22	200,000 GAL. FUEL OIL TANK		1964	Good Cond		
4000	SUL ISL	SHIPBOARD ELECTRONICS SYS. EVALUATION FAC.	3600	1970	Unknown		
4001	SUL. ISE	FLAGPOLE		1971	Cracking		
1229C	J-36	LUNCH SHELTER	900	1978	Good Cond		
2A	K-43	SHIPFITTER SHOP AND SAIL LOFT	140257	1937	Fair Cond		
301B	H-40	PUMPHOUSE AND PUMPWELL	7956	1908	Unknown		
302B	H-40	PUMPWELL (UNDERGROUND)	2052	1941	Unknown		
303B	H-30	PUMPWELL	630	1943	Good Cond		
317A	K-38	MARGINAL WHARF	2435				
317B	J-39	REPAIR WHARF (F)	4610		Unknown	Removed	
317C	L-38	INDUSTRIAL PIER (F)	5900		Chipped	Some PI known	Other PI is Suspect ACM
317D	K-36	INDUSTRIAL PIER (G)	7694		Unknown		
317E	K-34	INDUSTRIAL PIER (H)	6294		Peeling		Steam lines are Suspect ACM
317F	J-32	INDUSTRIAL PIER (J)	6294		Unknown	Removed	
327A		SUBSTATION PIER N	3680				
327B		SUBSTATION PIER N	3681				
327C		SUBSTATION PIER N	3682				
329A		SUBSTATION PIER Q	3520				
329B		SUBSTATION PIER Q	3520				
329C		SUBSTATION PIER Q	3520	1988			
3900J	H-32	STORAGE	418	1980	Unknown		
445A	H-41	GAS BOTTLE SHED	1080	1988	Unknown		
445B	H-39	GAS BOTTLE SHED	1200	1988			
445C	G-35	GAS BOTTLE SHED	1500	1988			
445D	K-42	GAS BOTTLE SHED	4420	1988	Unknown		
451A	E-42	SUBSTATION (PROPERTY SCE&G CO.)		1983	Unknown		
451B	F-41	SUBSTATION		1944	Good Cond		
451C	E-29	SUBSTATION		1944	Good Cond		
451D	F-41	SWITCHING STATION		1983	Good Cond		
451H	J-37	SUBSTATION		1983			
451K	J-22	SWITCHING STATION		1983			
451L	F-36	SWITCHING STATION		1983			
451M	G-45	SWITCHING STATION		1983			
451X	H-19	SWITCHING STATION		1983			
451Y	E-22	SWITCHING STATION		1990			
520A	E-39	FLAG POLE			Unknown		
58A	J-42	SHIPYARD QUALITY FIELD OFFICE		1942	Peeling	Suspect ACM	FT, PI suspect ACM. Hazard sign posted
590A	H-34	RADIOLOGICAL CONTROL OFFICE	12030	1935	Peeling	PI	FT and CT are Suspect ACM
NH72	E-48	HEATING PLANT BUILDING	837	1984	Chipped	Four pipe elbows	Elbows are in good cond.
NS2	M-16	UTILITY BUILDING	3494	1969	Good Cond		
NS3	M-17	PUMP HOUSE (AIRCRAFT TRUCK FUELING FACILITY)	726	1991	Unknown		
NS4	M-16	FUEL OIL STORAGE			Peeling		
NS44	L-14	HEATING PLANT	2600	1969	Peeling	Friable PI	ACM around boiler #1 and in elbows
NS45	L-13	FUEL STORAGE			Unknown		
NS5	L-17	500,000 GAL FRESH WATER STORAGE			Unknown		
NS6	L-17	PUMPHOUSE (FRESH WATER)	720	1959	Unknown		
NS69	H-15	BOILER HOUSE	1850	1984	Peeling	Friable PI	
NSC39	J-32	DIESEL OIL PUMPHOUSE (ABANDONED)	1160	1980	Unknown		
X30A	L-19	TRANSFORMER VAULT	252	1944	Chipped		
X33A	L-16	TRANSFORMER VAULT	210	1943	Unknown		

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
NAVAL HOSPITAL							
NH-68	G-47	MEDICAL STOREHOUSE	40,438	1973		Suspect ACM	
FLEET & MINE WARFARE TRAINING CENTER (8 April 94)							
202	L-18	INSTRUCTION BUILDING	39,119	1958	Good Cond		
203	K-18	GAS STORAGE	84	1958	Good Cond	Suspect ACM	Friable PI
204	K-18	FRESH WATER BOOSTER PUMPHOUSE	800	1958			
208	K-17	5000 GAL UNDERGROUND FUEL OIL TANK					
643	H-18	STATE DEPARTMENT	68,200	1970	Unknown	No friable ACM	Some airborne fibers reported
645	J-17	STATE DEPARTMENT	1,812	1969	Unknown	CT, PI, FI	Fittings are very friable
647	J-17	STATE DEPARTMENT	35,422	1965	Unknown	BC, TC, FI	
649	J-17	STATE DEPARTMENT	2,744	1967	Good Cond		
1282	K-18	ANTENNA POLES AND WIRE					
1302	K-18	HELICOPTER MOCK-UP PAD					
1303	K-18	DAMAGE CONTROL MOCK-UP	6,237	1953	Good Cond		
1306	K-18	5000 GAL FUEL OIL TANK		1954	Good Cond		
1307	K-17	FIRE FIGHTING TANK		1954			
1308	K-18	WATER/OIL SEPARATOR		1958			
1309	K-18	ENGINE ROOM MOCK-UP	900				
1310	K-18	CARRIER COMPARTMENT MOCK-UP	1,218				
1311	S-12	PUMP TEST TANK					
1312	S-12	PUMP TEST TANK					
1313	K-18	HOSE STORAGE	1,020	1958	Good Cond		
1424	K-18	10,200 GAL FRESH WATER STORAGE TANK			Chipped		
1715	L-17	MAINTENANCE SHOP	1,240	1968	Good Cond	Ceiling	Good condition
1722	J-17	SONAR HOIST SHELTER	30	1969			
1744	K-18	FIELD MEDICAL LOCKER	231	1970	Good Cond		
RESERVE READINESS CENTER (8 April 94)							
1656	P-48	CARGO HDLG BATT, VMF	4,000				
RTC1	L-18	ACADEMIC GENERAL INSTRUCTION BLDG. (HX-30)	32,752	1944	Peeling	Removed	Some areas are still suspect for ACM
RTC4	L-19	PAINT STORAGE	525	1944	Unknown		
SUBMARINE TRAINING FACILITY (8 April 94)							
FBM61	J-16	APPLIED INSTRUCTION BLDG	168,360	1983	Unknown	Transite, PI	FT and CT are Suspect ACM
686	J-15	OPERATIONAL TRAINER FACILITY	12,180	1963	Good Cond		
NAVAL STATION (6 April 94)							
2	CHASN	DEGAUSSING FACILITY AND BOAT PIER (Y)	4191		Exterior=Poor		Interior paint is in good cond.
17	N-15	QUAY WALL (PIERS S,T,U,V,W & X)			Unknown		
20	M-17	ADMIN/TRAINING BLDG. (MOTU 10)	10000	1959	Unknown		
23	M-14	MACHINE SHOP (SIMA)	24712	1959	Unknown		
27	N-14	ADMINISTRATIVE OFFICE (COOP 22)	1372	1959	Unknown		
28	N-13	BACHELOR OFFICERS' QUARTERS	90260	1959	Chipped	Suspect ACM	FT, CT, PI
33	M-14	ENLISTED MEN'S BARRACKS	27840	1958	Peeling		
34	M-14	ENLISTED MEN'S BARRACKS	27840	1958	Peeling		
36	M-14	ENLISTED MEN'S BARRACKS	27840	1958	Peeling		
37	M-15	ENLISTED MEN'S BARRACKS	27840	1958	Peeling	PI	FT and CT are suspect ACM
65	H-16	EM BARRACKS (A)	27840	1958	Peeling	Suspect ACM	FT and CT
81	H-46	FIRE STATION NO. 2	3000	1959	Peeling	PI	Suspect ACM includes PI and FT
86	N-45	COOPER RIVER CENTER	22149	1960	Peeling	Suspect ACM	FT, CT, insulation
89	E-37	EXCHANGE MAINTENANCE SHOP	2392	1959	Good Cond	Unspecified	Known
92	F-38	INDOOR SWIMMING POOL	14734	1959	Good Cond	Suspect ACM	Steam piping
132	G-26	FIRE DEPARTMENT	5191	1976	Chipped		
141	E-39	FIRE DEPARTMENT STORAGE	390	1959	Unknown		FT are suspect ACM
169	K-20	FLAMMABLE STOREHOUSE	512	1959	Unknown	Suspect ACM	Unspecified
180	E-38	RECREATION BUILDING	37206	1959	Unknown	Suspect ACM	FT, CT, PI
183	K-15	FLAG POLE			Unknown		
184	N-45	OUTDOOR SWIMMING POOL	3375	1959	Unknown	Paint	1989 inventory lists ACM paint
186	E-39	FIRE STATION NO. 1	8680	1959	Good Cond	PI	FT, CT, transite, plaster are suspect ACM
200	L-18	PORT SERVICES WITH TOWER	10724	1980	Good Cond	Suspect ACM	FI, FT, CT
214	N-45	FILTER HOUSE FOR STRUCTURE NO. 184	195	1959	Unknown		
220	M-46	GOLF PRO SHOP/SNACK BAR	2800	1968	Good Cond	Unspecified	Removal of unspecified ACM scheduled
225	D-36	NAVY LODGE	25718	1971	Good Cond		
229	N-45	BATHHOUSE CRC POOL	400	1982	Unknown		
243	D-40	PASS OFFICE	960	1985		Suspect ACM	FT, CT, mastic
245	E-39	FIRE STATION SUPPORT BLDG.	1200	1984			
326	K-27	BERTHING PIER (L)	3200		Good Cond	Suspect ACM	Steam lines
327	L-23	BERTHING PIER (N)	7973		Peeling	Suspect ACM	PI
328	L-21	BERTHING PIER (P)	9047		Unknown	Suspect ACM	Suspect due to date of construction
329	M-20	BERTHING PIER (Q)	6913		Peeling	Suspect ACM	PI
330	L-19	BERTHING PIER (R)	2267		Good Cond	Suspect ACM	PI
331	E-2	BULKHEAD					
332	D-3	WHARF, CATWALK & FINGER PIERS (Y), DEGAUSSING	3400				
334	G-9	CONCRETE RAMP	632				
335	K-21	BULKHEAD			Unknown	Suspect ACM	PI
336	K-24	BERTHING PIER (M)	6000		Unknown		
337	K-26	BERTHING PIER (Z)	21027		Good Cond		
338	M-43	PIER (B)					
373	E-39	RADIO TOWER, FIRE & SECURITY SECONDARY					
382	F-29	WEAPONS DISPLAY	800		Good Cond		
401	H-15	COOLING TOWER	400	1963	Unknown	PI	> 1 Asbestos
425	C-29	VEHICULAR BRIDGE - VIADUCT ROAD	4371				
601	H-15	12,000 GAL. FUEL OIL TANK			Good Cond		
602	F-16	8,000 GAL. FUEL OIL TANK			Unknown		
604	J-17	FLAG POLE			Unknown		
623	H-17	NEX VISUAL MERCHANDISING SHOP	1500				
635	D-3	DEGAUSSING GENERATOR BLDG.	840	1985	Good Cond		
636	H-21	AUTO HOBBY SHOP	3840	1971	Good Cond		
637	J-23	STORAGE BUILDING	504	1966	Worn		
638	J-20	BATH HOUSE	3016	1965	Unknown		
639	J-20	SWIMMING POOL			Unknown		
640	J-20	STEAMERS	11500	1963	Unknown	Suspect ACM	PI, FT, CT
641	F-26	WAREHOUSE/ADMINISTRATIVE (SUBRON 4)	8000	1979	Unknown		
642	G-19	MCDONALDS (OWNED BY MCDONALDS)					

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
644	J-18	BOWLING CENTER	44430	1964	Unknown		
646	J-17	STATE DEPARTMENT USE	89772	1965	Unknown	Suspect ACM	Due to age of building
648	G-20	GEAR LOCKER	16640	1966	Good Cond	Suspect ACM	PI and FT
650	G-21	POST OFFICE	9800	1969			
652	G-15	EM QUARTERS	32207	1963	Unknown		
653	G-15	ENLISTED MEN'S BARRACKS	19320	1974	Good Cond		
654	K-15	PERSONNEL SUPPORT DETACHMENT	24188	1963	Unknown		
655	E-17	COMMISSARY	70911	1973	Good Cond		
656	G-17	NAVY EXCHANGE, RETAIL, WAREHOUSE, SERVICE	95306	1968	Unknown	PI	Pipe wrap is friable
657	F-16	AMERICA'S ORIGINAL SPORTS BAR/J. E. WILLIAMS	42320	1969	Worn	CT, PI, TI, FI	ACM identified in 1990 survey
658	E-36	EM BARRACKS, MARINE SECURITY DETACHMENT	32207	1965	Unknown	Friable ACM	Unspecified ACM in mech, laundry rooms
659	D-3	BOAT HOUSE		1969			
660	D-3	INSTRUMENT BUILDING (DEGAUSSING)	2400	1969	Peeling		FT on 1st and 2nd floors
661	C-18	COMMUNICATIONS CENTER	9225	1968	Good Cond	PI, FI	
662	C-19	ANTENNA FIELD (ABANDONED)					
663	C-17	ANTENNA FIELD (ABANDONED)					
664	G-14	SUBGRU 6 STORAGE	5000	1974			
665	E-16	CONSOLIDATED PACKAGE STORE	6060	1975	Unknown	Removed	
668	F-15	BEQ (CPO)	27083		Unknown		
669	F-15	BEQ (CPO)	29304	1983	Peeling		
670	J-14	RACQUET & FITNESS CENTER	13604	1984			
671	D-17	DOG KENNEL	1184	1983			
672	F-21	FLEET TRAINING FACILITY	8400	1986	Unknown		
673	F-21	NCTSI FACILITY	3600	1986	Peeling		
674	F-26	PERFORMANCE MONITORING FACILITY	2880	1985	Unknown		
675	H-14	DENTAL CLINIC	19951	1977	Good Cond	Suspect ACM	FT, CT, toeboard are suspect ACM
676	G-13	ENLISTED MEN'S BARRACKS	42100	1990			
677	G-13	ENLISTED MEN'S BARRACKS	42100	1990			
678	N-13	ADMINISTRATIVE BLDG (MINERON 2)	5832	1989			
680	M-14	FLEET MAINTENANCE BUILDING (SIMA)	5002	1975	Unknown	PI	Some or all asbestos has been removed
681	M-14	SHOP AND ADMIN BUILDING (SIMA)	63756	1985		Suspect ACM	PI, FT, gasket material
682	M-12	SAILING CENTER (OFFICE)	2925				
683	N-12	FLOATING PIER FOR NS MARINA					
684	N-14	SHOP BUILDING (SIMA)	1500	1989	Good Cond	Removed	
685	L-18	SHIP RADAR CAL FACILITY W/ TOWER		1980	Unknown		
688	H-3	FLOATING PIER FOR NS MARINA				Suspect ACM	
807	F-48	CHILD DEVELOPMENT CENTER	14117	1984	Good Cond		
823	F-47	RADIO REPEATER SHELTER	80	1991			
850	E-46	VOLLEYBALL/BASKETBALL COURT					
1143	E-38	SPECIAL SERVICES CENTER	22158	1959	Unknown	PI	ACM under bldg was removed
1167	E-35	EXCHANGE WAREHOUSE	2205	1959	Unknown		
1177	E-29	FIRE STATION NO. 3	3000	1959	Peeling	Suspect ACM	PI, FT, CT all in good cond.
1179	F-37	CHAPEL	4664	1959	Peeling	PI (500 ft)	PI, FT, CT are suspect ACM
1189	E-36	FIRE PREVENTION & INSPECTION DIVISION AND	7000	1959	Peeling	Suspect ACM	
1197	E-29	SATO TRAVEL	1089	1959	Good Cond		FT is suspect ACM
1221	N-46	RECREATIONAL BUILDING	1479	1960		Suspect ACM	FT, CT, PI suspect ACM
1254	K-21	BUS SHELTER	189		Unknown		
1263	E-35	NEX STORAGE	207	1959	Unknown	Suspect ACM	CT
1265	E-35	NAVY EXCHANGE	633	1959	Good Cond		
1296	H-24	OPEN STORAGE (MOTORCYCLE SHED)	527	1977	Good Cond		
1323	O-6	BUS SHELTER	90				
1345	F-36	RESTROOMS (COCHRAN FIELD)	150	1962	Unknown		
1346	E-35	SERVICE STATION	13910	1962	Unknown	Brake Shoes	FT and CT are suspect ACM
1347	H-21	AUTO HOBBY SHOP	1100	1961	Unknown		
1401	E-34	THREE FOOTBALL FIELDS			Unknown		
1403	F-33	SOFTBALL FIELD (WINKEL FIELD)	44100			PI	
1410	L-48	GOLF COURSE			Unknown		
1412	F-36	SOFTBALL FIELD (COCHRAN FIELD)					
1431	H-23	SMALL EQUIPMENT STORAGE SHED	200	1959	Peeling		
1447	L-16	BATH HOUSE FOR STRUCTURE NO. NS59	1640	1959	Unknown	FI	
1448	L-15	FILTER HOUSE FOR STRUCTURE NO. NS59	400	1959	Good Cond		
1455	M-47	FOOT BRIDGE	88		Unknown		
1489	D-33	PICNIC SHELTER			Unknown		
1490	D-32	RESTROOM	202	1968	Unknown		
1493	H-21	AUTOMOTIVE HOBBY SHOP (GARAGE)	4508	1968	Fair Cond		
1494	G-20	TOOL STORAGE (GEAR LOCKER)	140	1968	Unknown		
1508	H-20	CAR WASH AND HOBBY SHOP	1458	1974	Unknown		
1509	C-42	STORAGE	12444	1976	Peeling	Suspect AM	PI, FT, CT
1512	H-19	FLAG POLE					
1630	R-53	BUS SHELTER	200		Unknown		
1642	H-47	AUTOMOBILE STORAGE	39600		Unknown		
1643	H-47	AUTOMOBILE STORAGE	39600		Unknown		
1646	K-49	GOLF COURSE WAREHOUSE	1750	1975	Peeling		Paint on exterior is peeling
1706	N-12	SMALL BOAT RAMP					
1708	H-10	GENERATOR BLDG.	187	1968			
1718	C-18	SEPTIC TANK AND DRAIN FIELD (ABANDONED)		1968			
1719	D-38	SPECIAL SERVICE EQUIPMENT STORAGE BLDG.	363	1968			
1720	E-39	FIRE DEPARTMENT	600	1969	Unknown		
1721	L-14	REFRIGERATION EQUIPMENT BLDG.	240	1973	Unknown		
1724	D-32	PICNIC SHELTER	720				
1725	D-32	PICNIC SHELTER	720				
1738	E-40	BUS SHELTER	96		Unknown		
1740	H-24	BUS SHELTER	90		Unknown		
1741	H-23	BUS SHELTER	63		Unknown		
1743	M-17	BUS SHELTER	60		Unknown		
1749	H-22	MAINTENANCE EQUIPMENT STORAGE SHED	2430	1970	Good Cond	Suspect ACM	CT
1776	J-13	SHOP (CBU 412)	4000	1971	Unknown		
1777	K-13	ADMINISTRATION (CBU 412)	960	1971	Unknown		
1778	K-13	TOOL AND SHOP STORAGE (CBU 412)	960	1971	Unknown	Suspect ACM	Suspected due to constr. date
1779	D-36	PLAYGROUND			Worn		
1785	G-20	BASKETBALL COURT	3600		Unknown		
1786	L-14	AIR CONDITIONER EQUIPMENT BUILDING	2184	1973	Good Cond		
1790	K-13	TENNIS COURTS	25132		Good Cond		
1791	M-17	STORAGE SHED (MOTU 10)	2220	1974	Good Cond		
1792	M-17	COLLIMATION EQUIPMENT BUILDING	800	1974	Unknown		
1794	D-33	PICNIC SHELTER	6240				
1799	M-13	PLAYING COURT	700		Chipped		
1813	E-47	FLAMMABLE STORAGE FOR NLSO	99	1984			
1816	L-16	STORAGE	960	1984	Unknown		
1817	L-16	STORAGE	960	1984	Unknown		

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
1820	J-22	BUS SHELTER	108				
1823	G-16	BUS SHELTER	108		Unknown		
1830	K-15	PICNIC SHELTER	400				
1837	F-26	BALL FIELD					
1839	H-20	SENTRY HOUSE (BRIG)	35				FT are suspect ACM
1840	G-20	BUTLER BLDG. (NAVAL DENTAL CLINIC STORAGE)	960	1983	Good Cond		
1841	G-20	BUTLER BLDG. (NAVAL DENTAL CLINIC STORAGE)	960	1983			
1843	H-13	INCINERATOR	35	1983		Suspect ACM	Interior of incinerator
1845	D-19	BALL FIELD					
1846	D-20	BALL FIELD					
1847	E-19/20	RUNNING TRACK					
1848	F-26	PUBLIC TOILET AND PRESSBOX	850	1985	Good Cond		
1869	H-10	OBSTACLE COURSE			Unknown		
1873		FLAG POLE			Unknown		
1874	L-18	PORT SERVICES STORAGE	864	1980	Good Cond		
1875	L-12	BEQ STORAGE	4136	1981			
1876	G-14	FLAG POLE			Unknown		
1877	K-14	WASH RACK (CBU 412)	120	1983			
1878	K-13	FLAG POLE (CBU 412)		1983			
1879	J-13	EQUIPMENT BUILDING (CBU 412)	960	1983			
1880	J-13	PAINT LOCKER (CBU 412)	64	1983	Good Cond		
1881	J-13	STORAGE (CBU 412)	960	1978	Unknown		
1882	J-13	STORAGE (CBU 412)	960	1978	Unknown		
1883	J-13	STORAGE (CBU 412)	960	1982	Unknown		
1885	K-13	ADMIN OFFICE (CBU 412)	960	1977	Unknown		Suspect ACM due to constr. date
1886	K-14	GENERAL STORAGE (CBU 412)	960	1977	Good Cond	Suspect ACM	PI, FT, CT all in good cond.
1887	H-13	GENERAL STORAGE (BEQ)			Unknown		
1888	J-12	INDOOR PISTOL RANGE	4708	1981			
1889	M-16	SUPPLY STORAGE (NAVSTA)	480	1984			
1891	L-16	BEQ MAINTENANCE	960	1977	Unknown		
1892	J-13	SUPPLY STORAGE (CBU 412)	720	1984			
1894	K-13	COLLATERAL STORAGE (CBU 412)	104	1987			
1895	B-6	CABLE REEL STORAGE	1500	1988			
1896	H-13	BEQ STORAGE			Unknown		
1897	H-13	BEQ STORAGE			Unknown		
1898	J-13	BEQ STORAGE			Unknown		
1899	J-13	HAZARDOUS MATERIAL STORAGE (CBR 412)					
1901	D-29	SENTRY HOUSE - GATE 1	56	1978	Unknown		
1902	E-39	SENTRY HOUSE - GATE 2	147	1979	Unknown		
1903	F-43	SENTRY HOUSE - GATE 3	168	1981			
1904	C-48	SENTRY HOUSE - GATE 4	147	1978			
1905	P-53	SENTRY HOUSE - GATE 5	147	1978	Unknown		
1980	D-39	VISITOR INFO SIGN REYNOLDS GATE		1983			
1981	F-34	SERVICE STATION SIGN					
1982	F-38	INFO SIGN STERETT HALL					
1983	E-29	ENTRANCE SIGN VIADUCT GATE		1984			
1984	H-13	PISTOL RANGE CLASSROOM	1440	1980	Good Cond		
520B	E-47	FLAG POLE					
M1067	E-45	STOREHOUSE	1568	1918	Fair Cond		
M1116	E-45	GENERAL WAREHOUSE	1230	1919	Unknown		
M1123	E-46	STOREHOUSE AND BOILER ROOM	360	1938	Unknown		
M1150	E-46	COUNSELING AND ASSISTANCE CENTER	5580	1941	Unknown		Building has ACM warning signs posted
M1257	E-46	GENERAL WAREHOUSE	896	1938	Unknown	Suspected AM	Roof shingles may be ACM
M1262	E-45	TENNIS COURT	13392				
M82	E-46	NAVSTA SECURITY	15366	1942			
NH1137	G-46	ADMIN OFFICE	9859	1973	Peeling	Dust in crawl sp	Floor is damaged and is suspect ACM
NH16	G-15	STORAGE	288	1974			
NH21	D-49	GENERAL PURPOSE LABORATORY, SOUTH DIV	1863	1974	Unknown		
NH45	E-47	ADMINISTRATIVE OFFICE (COMNAVBASE HQ)	29816	1974	Good Cond	PI	FT and CT are Suspect ACM
NH46	E-48	ADMINISTRATIVE OFFICE (DESRON 20/36)	35800	1974			
NH47	E-47	ADMINISTRATIVE OFFICE / NSGA MAINTENANCE SHOP	17736	1974	Unknown	Encapsulated	
NH48	D-48	ADMINISTRATIVE OFFICE	8313	1974	Peeling	PI, FI in crawl sp	ACM is heavily damaged
NH49	E-47	ADMINISTRATIVE OFFICE	17736	1974	Peeling	PI, FI	ACM removed from 3 wings in 1993
NH50	D-48	ADMINISTRATIVE OFFICE	8868	1974	Unknown	1140 ft of PI	
NH51	F-47	ADMINISTRATIVE OFFICE	17736	1974	Peeling	Suspect ACM	Some ACM removed. Suspect FI, CT, PI
NH52	E-48	RESIDENT OFFICER IN CHARGE OF CONSTRUCTION	8868	1974	Peeling	PI, CT	
NH53	F-48	ADMIN. OFFICE (NAVAL INVESTIGATIVE SERVICE)	18456	1974	Unknown	Encapsulated	
NH54	E-48	ADMIN. OFFICE (NSGA OPERATIONS/COMMUNICA)	8868	1974	Peeling	Encapsulated	PI and FT encapsulated
NH55	E-47	LEGAL SERVICE OFFICE	16878	1974	Unknown	950 ft of PI	Some ductwork covered in ACM
NH61	F-47	FAMILY SERVICE CENTER	17728	1973	Peeling	Suspect ACM	CT, FT, Wallboards are suspect ACM
NH62	F-47	NSC HOUSEHOLD GOODS, WPNSTA HSNG, AND NS	24550	1973	Peeling	PI	Scheduled for removal
NS1	M-15	ADMIN BUILDING (COMINWARCOM)	46410	1959	Peeling		
NS10	P-14	BERTHING PIER (U)	1737		Good Cond		
NS11	P-13	FLOATING PIER (V)	330		Good Cond		
NS12	P-13	FLOATING PIER (W)	470		Good Cond		
NS13	P-13	FLOATING PIER (X)	470		Good Cond		
NS16	L-17	ADMINISTRATIVE OFFICE (DESRON 4/6)	18860	1959	Unknown	Suspect ACM	CT and PI are suspect ACM
NS161	F-25	SUPSHIP STORAGE	1456				
NS19	M-17	COVERED STORAGE (MOTU 10)	3200	1959	Peeling		
NS21	M-17	CABLE REEL BLDG. (SIMA)	1200	1959	Unknown		
NS26	N-14	ADMINISTRATIVE OFFICE (SIMA)	22322	1959	Peeling		Asbestos dust in brake repair area
NS31	M-13	DISCIPLINARY & TRANSIENT PERSONNEL BARRACKS	27840	1960	Unknown	Crawl Space	FT and PI are Suspect ACM
NS32	M-14	TRANSIENT PERSONNEL BARRACKS	27840	1958	Good Cond	PI, FI	FT and CT are Suspect ACM
NS35	M-14	ENLISTED MEN'S BARRACKS	27840	1958	Peeling		FT removed
NS38	M-15	ENLISTED MEN'S BARRACKS	27840	1958			
NS43	L-14	ENLISTED DINING HALL	26772	1958			
NS46	L-15	NAVSTA HQ, LIBRARY, LAUNDRY, AND ARMORY	48115	1958	Peeling		FT are Suspect ACM
NS48	K-14	TENNIS COURT					
NS53	L-16	FOOD CUBE	17172	1959	Unknown		Sewer pipes are transite
NS54	K-15	BILLETING OFFICE	742	1958	Chipped		
NS55	M-15	FLAG POLE			Unknown		
NS59	L-15	OUTDOOR SWIMMING POOL		1959	Unknown		
NS66	H-16	EM BARRACKS (B)	32207	1963	Peeling	Suspect ACM	CT, FT, wallboards are Suspect ACM
NS67	H-15	EM BARRACKS (C)	32207	1963	Unknown	Suspect ACM	CT are Suspect ACM
NS7	N-13	ADMINISTRATIVE BUILDING (MINE DIVISION 125)	3774	1959	Chipped		
NS71	G-16	MINI-MART/VENDING OFFICE/TRAINING	14700	1963	Peeling	Suspect ACM	CT, FT
NS79	H-19	DISPENSARY	19132	1963	Chipped	PI, BC	
NS8	N-17	BERTHING PIER (S)			Good Cond		
NS80	H-20	DISPENSARY SUPPLY STORAGE	441	1963	Worn		
NS84	J-19	NAVAL SECURITY GROUP ACTIVITY	8553		Unknown	Suspect ACM	PI, CT, FT

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
N59	P-16	BERTHING PIER (T)			Good Cond		
X10	H-23	GENERAL WAREHOUSE	24735	1972	Unknown	Suspect ACM	CT and PI are Suspect ACM
X11	H-23	PUBLIC WORKS MAINTENANCE SHOPS	4129	1959	Peeling		
X12	H-23	MAINTENANCE SHOP	1500	1959	Peeling		
X25	J-20	FLEET LAUNDRYMAT (TEMPORARY)	3390	1959	Peeling		
X2N	E-38	GENERAL WAREHOUSE	660	1959	Unknown		
X54	J-10	CORRECTIONAL CUSTODY UNIT	3162	1959	Good Cond	Encapsulated	PI has been encapsulated
X55	G-9	AMMUNITION STORAGE	168	1959	Unknown		
X56	F-8	AMMUNITION STORAGE	168	1959	Unpainted		
HOUSING NAVAL BASE COMPLEX (8 April 94)							
1101	M-45	GARAGE FOR QUARTERS 'A'	1,052				
1284	L-46	GARAGE, QUARTERS 'B'	418				
1285	K-46	GARAGE, QUARTERS 'C'	506				
1287	L-47	GARAGE, QUARTERS 'C'	940				
1289	K-45	GARAGE, QUARTERS 'J' AND STORAGE	570				
1411	L-44	TENNIS COURTS (QTRS. AREA)					
1413	E-49	HEATING PLANT (QTRS. 780)	258				
1414	E-49	GARAGE FOR QUARTERS 781	487				
1418	E-49	DETACHED GARAGE FOR QTRS. 780	284				
1427	K-44	GARAGE, QUARTERS 'F'	592				
1428	L-44	GARAGE, QUARTERS 'H', AND 'I'	878				
520C	L-45	FLAG POLE (QTRS 'A')					
700	J-45	OFFICERS' QUARTERS	1,656				
701	J-45	OFFICERS' QUARTERS	1,738		Good Cond		FT are Suspect ACM
705	K-44	OFFICERS' QUARTERS	1,705				
706	K-46	OFFICERS' QUARTERS	1,656				
708	J-46	OFFICERS' QUARTERS	1,600				
712	J-45	OFFICERS' QUARTERS	1,656				
717	L-44	OFFICERS' QUARTERS	1,705				
718	L-43	OFFICERS' QUARTERS	1,705				
719	M-44	OFFICERS' QUARTERS	1,738				
743	H-46	OFFICERS' QUARTERS	2,483				
744	J-46	OFFICERS' QUARTERS	3,820				
745	H-46	OFFICERS' QUARTERS	2,821				
746	J-46	OFFICERS' QUARTERS	2,821				
747	J-46	OFFICERS' QUARTERS	2,483				
748	J-46	OFFICERS' QUARTERS	2,821				
749	J-47	OFFICERS' QUARTERS	2,821				
750	J-47	OFFICERS' QUARTERS	2,821				
751	J-47	OFFICERS' QUARTERS	2,821				
758NHA	F-49	OFFICERS' QUARTERS	4,108			Suspect ACM	PI near boiler
759NH-B	E-49	QUARTERS, CO. NH	4,108		Unknown		
760NH-D	E-49	OFFICERS' QUARTERS	3,799		Unknown	Crawl Space	Crawl space has warning label
761NH-C	E-50	OFFICERS' QUARTERS	4,766				
762NH-I	D-48	OFFICERS' QUARTERS	2,254				
763NH-H	D-48	OFFICERS' QUARTERS	2,254				
765	D-45	MARINE NCO QUARTERS	2,926				
769	C-47	OFFICERS' QUARTERS	2,821				
777	D-47	OFFICERS' QUARTERS	2,821				
780	C-46	OFFICERS' QUARTERS	3,389				
781	B-46	OFFICERS' QUARTERS	2,821				
782	B-46	OFFICERS' QUARTERS	1,656				
A	L-45	QUARTERS, COMSIX/COMNAVBASE (FLAG)	7,391		Unknown	Suspect ACM	PI, FT, CT
AA	D-47	OFFICERS' QUARTERS	4,128				
B	L-46	QUARTERS, COMINFANT (FLAG)	3,744		Unknown	Removed in 1993	
BB	D-47	OFFICERS' QUARTERS	4,128				
C	K-46	QUARTERS, COMSUBFLOTSIX (FLAG)	5,084				
CC	D-46	OFFICERS' QUARTERS	4,128				
D	K-48	OFFICERS' QUARTERS	2,064				
DD	C-46	OFFICERS' QUARTERS	4,128				
EE	C-46	OFFICERS' QUARTERS	4,128				
F	K-45	QUARTERS, CO. NSC	6,402		Peeling		ACM is present but unspecified
FF	C-46	OFFICERS' QUARTERS	4,128				
G	K-47	QUARTERS (FLAG) COMDESGRU 2			Good Cond	Suspect ACM	FT, CT, PI
GG	C-46	OFFICERS' QUARTERS	4,128				
H	L-44	OFFICERS' QUARTERS	8,205				
HH	C-47	OFFICERS' QUARTERS	4,128				
I	L-44	OFFICERS' QUARTERS	8,205		Unknown	Suspect ACM	FT, CT, PI
II	C-47	OFFICERS' QUARTERS	4,128				
J	K-45	OFFICERS' QUARTERS	2,319				
JJ	C-47	OFFICERS' QUARTERS	4,128				
K	M-44	QUARTERS, CO. NS	5,000				
KK	C-47	OFFICERS' QUARTERS	4,128				
L	M-44	OFFICERS' QUARTERS, CNSY	5,000				
LL	D-47	OFFICERS' QUARTERS	4,128				
M	M-43	OFFICERS' QUARTERS	5,000				
M10	C-45	OFFICERS' QUARTERS	2,186				
M11	C-45	OFFICERS' QUARTERS	1,656				
M1A	C-46	GARAGE	242				
M2A	C-46	GARAGE	242				
M3A	D-46	MARINE MAINTENANCE SHOP	902				
M5	C-45	NCO QUARTERS	2,064				
M6	D-45	OFFICERS' QUARTERS	2,064				
M7	C-45	OFFICERS' QUARTERS	2,064				
M8	C-45	OFFICERS' QUARTERS	2,064		Unknown		
M9	C-45	OFFICERS' QUARTERS	2,064				
N	L-43	OFFICERS' QUARTERS	5,000				
O	K-48	OFFICERS' QUARTERS	5,000				
P	J-47	OFFICERS' QUARTERS	5,000				
Q	J-46	OFFICERS' QUARTERS	5,000				
R	J-46	OFFICERS' QUARTERS	5,000		Peeling	Suspect ACM	FT, CT, PI
S	J-47	OFFICERS' QUARTERS	5,000				
T	K-47	OFFICERS' QUARTERS	5,000		Unknown	PI	
W	J-46	OFFICERS' QUARTERS	2,064				
X	J-46	OFFICERS' QUARTERS	2,064				
Y	K-46	OFFICERS' QUARTERS	4,006				
Z	K-46	OFFICERS' QUARTERS	3,866				

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
NAVAL SUPPLY CENTER							
14	K-17	SMALL CRAFT READY FUEL STORAGE (NOT IN USE)			Chipping		
64	G-46	WAREHOUSE	84,990	1964	Unknown		
83	A-45	BUSINESS OPPORTUNITY CENTER	1,692	1977		PI	
98	F-31	FUEL OIL BOOSTER PUMPHOUSE	5,060	1964	Good Cond	Suspect ACM	PI, FT, CT, all in good condition
133	E-32	OPERATIONAL STORAGE	936	1964	Worn	Suspect ACM	CT
135	P-50	OPERATIONAL STORAGE	1,692	1964	Unknown	Suspect ACM	CT and FT
148	F-31	STRIPPER CONCRETE TANK			Good Cond		
172	E-31	OPERATIONAL STORAGE	1,110	1964	Worn		Some ACM removed in 1970s
173	J-49	OPERATIONAL STORAGE	130	1964	Unknown		
191	M-50	CONTROLLED HUMIDITY WAREHOUSE (CNSY, MMF)	6,058	1964	Peeling	Suspect ACM	Flooring, ceiling material are suspect ACM
193	G-26	COLD STORAGE WAREHOUSE/LABORATORY	33,886	1964	Peeling	Suspect ACM	CT, FT, PI, ceiling plaster
198	E-44	SUPPLY RECEIVING, SHIPPING & ADMIN. & ADP BLDG.	229,293	1964	Unknown	FI, TC	Roof may be ACM
219	E-44	BATTERY CHARGING STATION	1,248	1968	Unknown		
224	E-27	SHIPS OUTFITTING, CLOTHING STORAGE, FLT STOR	62,310	1972		Suspect ACM	FT and CT
233	F-46	BATTERY CHARGING FACILITY	1,768	1972	Unknown		
290	F-44	UNINTERRUPTABLE POWER SOURCE BLDG.	1,209	1984			
321	R-47	SUPPLY PIER (ALPHA)	4,432	1964	Unknown		
325	K-28	FUELING PIER (K)	3,056		Unknown	Some removed	
547	H-48	OPEN STORAGE (STEEL PLATE)	9,051	1964			
1001	H-49	HAZ FLAM OPEN STORAGE	25,620	1985	Fair Cond		FT are Suspect ACM
1079	G-49	HAZARDOUS FLAMMABLE STORAGE	42,370	1985	Unknown		FT are Suspect ACM
1127	H-44	PRESERVATION SHOP AND BULK STORAGE	21,845	1964	Unknown		
1138	F-44	BIN ISSUE WAREHOUSE	121,632	1964	Unknown	Some removed	
1172	G-34	SERVMART	27,877	1964	Unknown	Suspect ACM	FT and CT
1226	K-49	SHOP REPAIR STORAGE	341	1964	Unknown		ACM is present but unspecified
1385	H-48	FIELD OFFICE	153	1965	Chipping		FT
1419	F-44	MISSILE DISPLAY					
1420	E-45	FLAG POLE					
1449	R-52	PORTABLE FIELD OFFICE			Unknown		
1501	A-44	WAREHOUSE	11,280	1964	Peeling		Some non-friable ACM parts stored in bldg.
1502	B-44	WAREHOUSE	61,200	1964	Peeling	CT	In good condition
1503	B-43	WAREHOUSE	61,200	1964	Unknown	Suspect ACM	FT and CT
1504	B-43	WAREHOUSE	12,600	1964	Peeling		
1505	A-44	WAREHOUSE(NWS HOUSING STORAGE)	3,108	1964	Peeling		Exterior paint is in poor condition
1507	B-42	WAREHOUSE	36,764	1964	Peeling	Wallboard	
1513	B-43	STORAGE BLDG. (RUBB)	8,970	1987			
1514	C-43	1500 GPM PUMPING STATION	320	1990			
1571	D-44	FLAMMABLE STORAGE SHELTER	704	1977			
1603	R-50	MTIS WAREHOUSE	28,560	1964	Worn	Suspect ACM	FT, CT
1604	R-53	WAREHOUSE	18,156	1964	Peeling		
1605	R-52	WAREHOUSE (REPAIRABLES PROCESSING)	43,008	1964	Unknown		
1606	S-51	WAREHOUSE (DRMO)	39,296	1964	Unknown	Transite siding	FT and CT are Suspect ACM
1607	P-52	WAREHOUSE (DRMO)	11,284	1964	Unknown	Exterior siding	FT and CT are Suspect ACM
1612	R-51	OPEN STORAGE (DRMO)	4,952				
1613	S-51	OPEN STORAGE (DRMO)	5,000	1964			
1614	N-52	OPEN STORAGE	7,976	1964	Unknown		
1620	P-50	WAREHOUSE, OPERATIONAL STORAGE	8,000	1964	Unknown		
1621	P-50	WAREHOUSE	8,247	1972	Chipping		FT and CT are Suspect ACM
1622	N-50	WAREHOUSE (PMO)	8,000	1963	Unknown		
1623	N-50	WAREHOUSE (PMO)	4,000	1964	Unknown		FT are Suspect ACM
1624	P-49	BATTERY CHARGING FACILITY	1,440	1975	Unknown		
1627	S-52	SALES FACILITY (DRMO)	5,000	1973	Good Cond		
1628	M-51	PUBLICATIONS AND PRINTING PLANT (NPPSO)	26,520	1980	Peeling		Floor tile mastic contains asbestos
1629	R-50	FLAMMABLE STORAGE SHELTER	704	1977			
1631	F-46	VEHICLE STORAGE SHED	2,250	1981	Good Cond		
1632	P-48	GENERAL STORAGE SHED	15,000	1982	Unknown		FT are Suspect ACM
1633	R-48	VALVE HOUSE	132	1964	Unknown		
1634	K-49	SHELTER FOR BAND SAW	289	1982			
1635	K-49	FIELD OFFICE	720	1987			
1636	P-49	STORAGE BLDG. (RUBB)	11,880	1988	Unknown		
1637	R-49	STORAGE BLDG. (RUBB)	11,880	1988			
1638	R-49	STORAGE BLDG. (RUBB)	8,970	1988			
1639	N-51	CONTROLLED HUMIDITY WAREHOUSE	59,813	1990			
1640	S-50	CONFORMING STORAGE FACILITY (DRMO)	36,000	1989			
1647	N-51	PUMP HOUSE	380	1990			
1648	P-51	GENERAL STORAGE BLDG.	38,658	1992	Unknown		
1649	S-51	STORAGE SHED (DRMO)	4,375	1992			
1650	F-44	SECURITY HOUSE	64	1988			
1651	G-49	2500 GPM PUMPING STATION	272	1985			
1652	R-48	SENTRY HOUSE	36	1988			
1653	E-31	FUEL TESTING LAB	896	1991			
1654	E-31	ACCOUNTING BUILDING	1,280	1991			
1655	F-45	GENERAL WAREHOUSE	12,480	1992			
1800	H-29	WARMING/ADMIN. BLDG.	638	1977	Good Cond		
1810	H-29	AIR COMPRESSOR BLDG.	72	1977	Good Cond		
1814	E-27	FLAMMABLE STORAGE SHELTER	704	1977			
3911	H-29	LUBRICANT STORAGE TANK (50,000 GAL.)		1977	Unknown		
3912	G-29	LUBRICANT STORAGE TANK (50,000 GAL.)		1977	Unknown		
3913	H-29	TANK TRUCK/CAR LOADING/UNLOADING FACILITY	70	1977	Unknown		
3914	H-29	POL OPN/SAMPLING/TEST BLDG	140	1991			
3915	D-33	LUBRICANT STORAGE TANK 1,008,000 GAL.					
3916	E-30	DIESEL OIL TANK 4,200,000 GAL (3900G)			Good Cond		
3917	D-30	DIESEL OIL TANK 4,200,000 GAL (3900H)			Good Cond		
3926	E-32	BALLAST WATER TREATMENT FACILITY	13	1976			
1601B	P-48	WAREHOUSE	82,980	1964			
1602C	P-49	WAREHOUSE	100,980	1964		Suspect ACM	PI, FT, CT
39A	E-33	BALLAST/SLUDGE STORAGE TANK, 741,000 GAL.					
3900E	E-31	DIESEL OIL TANK, 2,350,000 GAL.			Good Cond		
3900F	D-31	DIESEL OIL TANK, 2,350,000 GAL.			Good Cond		
3900I	E-31	DIESEL OIL PUMPHOUSE/LABORATORY	3,425		Worn	Boiler ACM rmvd	Abated in 1972
3901A	E-31	BALLAST/SLUDGE STORAGE TANK, 103,194 GAL.			Chipping		
3901B	E-31	SLUDGE PUMPHOUSE	340		Worn		
39D	F-33	BALLAST/SLUDGE STORAGE TANK, 741,000 GAL.		1964	Good Cond		
39L	E-32	DIESEL TANK, 6,500 GAL.			Good Cond		
39M	E-32	DIESEL PUMPHOUSE			Poor Cond		
M1136	D-44	ADMINISTRATIVE BUILDING	2,832	1966	Unknown	Some removed	FT, CT and wallboard are suspect ACM
M1263	E-45	PICNIC AREA					
M17	D-45	ADMINISTRATION BUILDING	25,784	1985	Unknown	PI, FI	FI and FT are Suspect ACM

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
M766	D-44	ADMINISTRATION BLDG.	141,148		Unknown		
NSC45	G-43	WAREHOUSE	49,572	1964	Unknown	PI is Friable	Ceiling tiles are Suspect ACM
NSC66	G-45	WAREHOUSE	77,990	1964	Unknown	PI	FT and CT are Suspect ACM
NSC67	F-45	WAREHOUSE	82,650	1964	Unknown	PI	FT are ACM, but non-friable
NAVAL SUPPLY CENTER CHICORA TANK FARM							
3906K		DIESEL FUEL OIL TANK 2,130,000 GAL.			Good Cond		
3906L		DIESEL FUEL OIL TANK 2,128,000 GAL.			Good Cond		
3906M		SHIP FUEL OIL TANK 2,132,000 GAL.			Good Cond		
3906N		SHIP FUEL OIL TANK 2,126,000 GAL.			Good Cond		
3906O		BALLAST/SLUDGE STORAGE TANK 1,153,000 GAL.					
3906P		DIESEL FUEL OIL TANK 2,128,000 GAL.			Good Cond		
3906Q		OPERATIONAL STORAGE	1,672	1964	Chipping	Removed in 1980s	
3906R		TRANSFORMER VAULT	345	1964	Chipping		
3906S		TRANSFORMER VAULT	345	1964	Chipping		
3920		RUNOFF OIL/WATER SEPARATOR		1975	Good Cond		
NAVAL ANNEX							
2501		RADAR LOUNGE			Good Cond		
2505		COMPANY C VEHICLE MAINTENANCE			Unknown	Abated 10/93	
2506		BARRACKS - VACANT			Peeling	Plaster, debris	FT suspected of being ACM, siding is ACM
2507		BATH HOUSE			Peeling		
2508		MAINTENANCE SHOP			Chipping		
2509		RADAR TOWER			Poor Cond	CT, PI	
2511		ADMINISTRATION BUILDING			Good Cond	No friable	FT, transite, mop board, ducts are suspect ACM
2513		DIESEL PLANT			Poor Cond		
2517		NMCR ADMINISTRATION			Peeling		
2520		TRAINING AND MEDICAL BUILDING			Good Cond	CT	FT also suspected ACM
2521		ARMORY			Good Cond	CT	FT also suspected ACM
2522		MOBILE MINE ASSEMBLY GROUP			Good Cond		
2523		NMCR ADMINISTRATION			Good Cond		
2524		SUPPLY AND COMPONENT TESTING			Good Cond	Elbows	
2530		MAINTENANCE STORAGE			Poor Cond		
2532		PAINT STORAGE			Poor Cond		
2533		STORAGE FOR MCRC			Peeling	CT, PI	FT also suspected ACM
2535		WATER TREATMENT FACILITY			Peeling		Roofing materials may be ACM
2552		SWIMMING POOL			Peeling		
2554		SUBSTATION			Unknown		
2555		ENTRANCE SIGN			Unknown		
2557		SEWAGE PUMPING STATION			Unknown		
KEY:							
		LBP = LEAD BASED PAINT					
		ACM = ASBESTOS CONTAINING MATERIALS					
		PI = PIPE INSULATION					
		FI = PIPE FITTINGS (ELBOWS, VALVES)					
		CT = CEILING TILES					
		FT = FLOOR TILES					
NOTES:							
		Source of asbestos survey information: EBS (ENSAFE/Allen & Hofshall, 1994)					
		Source of lead based paint information: EBS(ENSAFE/Allen & Hofshall, 1994)					
		Source of construction date information:					

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
NAVAL HOSPITAL							
NH-68	G-47	MEDICAL STOREHOUSE	40,438	1973		Suspect ACM	
FLEET & MINE WARFARE TRAINING CENTER (8 April 94)							
202	L-18	INSTRUCTION BUILDING	39,119	1958	Good Cond		Radon gas detected above EPA Action Level
203	K-18	GAS STORAGE	64	1958	Good Cond	Suspect ACM	Friable PI
204	K-18	FRESH WATER BOOSTER PUMPHOUSE	800	1958			
208	K-17	5000 GAL UNDERGROUND FUEL OIL TANK					
643	H-18	STATE DEPARTMENT	68,200	1970	Unknown	No friable ACM	Some airborne fibers reported
645	J-17	STATE DEPARTMENT	1,612	1969	Unknown	CT, PI, FI	Fittings are very friable
647	J-17	STATE DEPARTMENT	35,422	1965	Unknown	BC, TC, FI	
649	J-17	STATE DEPARTMENT	2,744	1967	Good Cond		
1282	K-18	ANTENNA POLES AND WIRE					
1302	K-18	HELICOPTER MOCK-UP PAD					
1303	K-18	DAMAGE CONTROL MOCK-UP	6,237	1953	Good Cond		
1306	K-18	5000 GAL FUEL OIL TANK		1954	Good Cond		
1307	K-17	FIRE FIGHTING TANK		1954			
1308	K-18	WATER/OIL SEPARATOR		1958			
1309	K-18	ENGINE ROOM MOCK-UP	900				
1310	K-18	CARRIER COMPARTMENT MOCK-UP	1,218				
1311	S-12	PUMP TEST TANK					
1312	S-12	PUMP TEST TANK					
1313	K-18	HOSE STORAGE	1,020	1958	Good Cond		
1424	K-18	10,200 GAL FRESH WATER STORAGE TANK			Chipped		
1715	L-17	MAINTENANCE SHOP	1,240	1968	Good Cond	Ceiling	Good condition
1722	J-17	SONAR HOIST SHELTER	30	1969			
1744	K-18	FIELD MEDICAL LOCKER	231	1970	Good Cond		
RESERVE READINESS CENTER (8 April 94)							
1656	P-48	CARGO HDLG BATT. VMF	4,000				
RTC1	L-18	ACADEMIC GENERAL INSTRUCTION BLDG. (HX-30)	32,752	1944	Peeling	Removed	Some areas are still suspect for ACM
RTC4	L-19	PAINT STORAGE	525	1944	Unknown		
SUBMARINE TRAINING FACILITY (8 April 94)							
FBM61	J-16	APPLIED INSTRUCTION BLDG	168,360	1983	Unknown	Transite, PI	FT and CT are Suspect ACM
686	J-15	OPERATIONAL TRAINER FACILITY	12,180	1963	Good Cond		
NAVAL STATION (6 April 94)							
2	CHASN	DEGAUSSING FACILITY AND BOAT PIER (Y)	4191		Exterior=Poor		Interior paint is in good cond.
17	N-15	QUAY WALL (PIERS S,T,U,V,W & X)			Unknown		
20	M-17	ADMIN/TRAINING BLDG. (MOTU 10)	10000	1959	Unknown		
23	M-14	MACHINE SHOP (SIMA)	24712	1959	Unknown		
27	N-14	ADMINISTRATIVE OFFICE (COOP 22)	1372	1959	Unknown		
28	N-13	BACHELOR OFFICERS' QUARTERS	90260	1959	Chipped	Suspect ACM	FT, CT, PI
33	M-14	ENLISTED MEN'S BARRACKS	27840	1958	Peeling		
34	M-14	ENLISTED MEN'S BARRACKS	27840	1958	Peeling		
36	M-14	ENLISTED MEN'S BARRACKS	27840	1958	Peeling		
37	M-15	ENLISTED MEN'S BARRACKS	27840	1958	Peeling	PI	FT and CT are suspect ACM
65	H-16	EM BARRACKS (A)	27840	1958	Peeling	Suspect ACM	FT and CT
81	H-46	FIRE STATION NO. 2	3000	1959	Peeling	PI	Suspect ACM includes PI and FT
86	N-45	COOPER RIVER CENTER	22149	1960	Peeling	Suspect ACM	FT, CT, insulation
89	E-37	EXCHANGE MAINTENANCE SHOP	2392	1959	Good Cond	Unspecified	Known
92	F-38	INDOOR SWIMMING POOL	14734	1959	Good Cond	Suspect ACM	Steam piping
132	G-26	FIRE DEPARTMENT	5191	1976	Chipped		
141	E-39	FIRE DEPARTMENT STORAGE	390	1959	Unknown		FT are suspect ACM
169	K-20	FLAMMABLE STOREHOUSE	512	1959	Unknown	Suspect ACM	Unspecified
180	E-38	RECREATION BUILDING	37206	1959	Unknown	Suspect ACM	FT, CT, PI
183	K-15	FLAG POLE			Unknown		
184	N-45	OUTDOOR SWIMMING POOL	3375	1959	Unknown	Paint	1989 inventory lists ACM paint
186	E-39	FIRE STATION NO. 1	8680	1959	Good Cond	PI	FT, CT, transite, plaster are suspect ACM
200	L-18	PORT SERVICES WITH TOWER	10724	1980	Good Cond	Suspect ACM	FI, FT, CT
214	N-45	FILTER HOUSE FOR STRUCTURE NO. 184	195	1959	Unknown		
220	M-46	GOLF PRO SHOP/SNACK BAR	2800	1968	Good Cond	Unspecified	Removal of unspecified ACM scheduled
225	D-36	NAVY LODGE	25718	1971	Good Cond		
229	N-45	BATHHOUSE CRC POOL	400	1982	Unknown		
243	D-40	PASS OFFICE	960	1985		Suspect ACM	FT, CT, mastic
245	E-39	FIRE STATION SUPPORT BLDG.	1200	1984			
326	K-27	BERTHING PIER (L)	3200		Good Cond	Suspect ACM	Steam lines
327	L-23	BERTHING PIER (N)	7973		Peeling	Suspect ACM	PI
328	L-21	BERTHING PIER (P)	9047		Unknown	Suspect ACM	Suspect due to date of construction
329	M-20	BERTHING PIER (Q)	6913		Peeling	Suspect ACM	PI
330	L-19	BERTHING PIER (R)	2267		Good Cond	Suspect ACM	PI
331	E-2	BULKHEAD					
332	D-3	WHARF, CATWALK & FINGER PIERS (Y), DEGAUSSING	3400				
334	G-9	CONCRETE RAMP	632				
335	K-21	BULKHEAD			Unknown	Suspect ACM	PI
336	K-24	BERTHING PIER (M)	6000		Unknown		
337	K-26	BERTHING PIER (Z)	21027		Good Cond		
338	M-43	PIER (B)					
373	E-39	RADIO TOWER, FIRE & SECURITY SECONDARY					
382	F-29	WEAPONS DISPLAY	800		Good Cond		
401	H-15	COOLING TOWER	400	1963	Unknown	PI	> 1 Asbestos
425	C-29	VEHICULAR BRIDGE - VIADUCT ROAD	4371				
601	H-15	12,000 GAL. FUEL OIL TANK			Good Cond		
602	F-16	8,000 GAL. FUEL OIL TANK			Unknown		
604	J-17	FLAG POLE			Unknown		
623	H-17	NEX VISUAL MERCHANDISING SHOP	1500				
635	D-3	DEGAUSSING GENERATOR BLDG	840	1985	Good Cond		
636	H-21	AUTO HOBBY SHOP	3840	1971	Good Cond		
637	J-23	STORAGE BUILDING	504	1966	Worn		
638	J-20	BATH HOUSE	3016	1965	Unknown		
639	J-20	SWIMMING POOL			Unknown		
640	J-20	STEAMERS	11500	1963	Unknown	Suspect ACM	PI, FT, CT
641	F-26	WAREHOUSE/ADMINISTRATIVE (SUBRON 4)	8000	1979	Unknown		
642	G-19	MCDONALDS (OWNED BY MCDONALDS)					

NAVY BASE CHARLESTON BUILDING INVENTORY

NO.	LOC	BUILDING NAME OR CURRENT USE	SQ FT	YEAR BUILT	LEAD BASED PAINT CONDITION	FRIABLE ASBESTOS	COMMENTS
M766	D-44	ADMINISTRATION BLDG.	141,148		Unknown		
NSC45	G-43	WAREHOUSE	49,572	1964	Unknown	PI is Friable	Ceiling tiles are Suspect ACM
NSC66	G-45	WAREHOUSE	77,990	1964	Unknown	PI	FT and CT are Suspect ACM
NSC67	F-45	WAREHOUSE	82,650	1964	Unknown	PI	FT are ACM, but non-friable
NAVAL SUPPLY CENTER CHICORA TANK FARM							
3906K		DIESEL FUEL OIL TANK 2,130,000 GAL.			Good Cond		
3906L		DIESEL FUEL OIL TANK 2,128,000 GAL.			Good Cond		
3906M		SHIP FUEL OIL TANK 2,132,000 GAL.			Good Cond		
3906N		SHIP FUEL OIL TANK 2,126,000 GAL.			Good Cond		
3906O		BALLAST/SLUDGE STORAGE TANK 1,153,000 GAL.					
3906P		DIESEL FUEL OIL TANK 2,128,000 GAL.			Good Cond		
3906Q		OPERATIONAL STORAGE	1,672	1964	Chipping	Removed in 1980s	
3906R		TRANSFORMER VAULT	345	1964	Chipping		
3906S		TRANSFORMER VAULT	345	1964	Chipping		
3920		RUNOFF OIL/WATER SEPARATOR		1975	Good Cond		
NAVAL ANNEX							
2501		RADAR LOUNGE			Good Cond		
2505		COMPANY C VEHICLE MAINTENANCE			Unknown	Abated 10/93	
2506		BARRACKS - VACANT			Peeling	Plaster, debris	FT suspected of being ACM, siding is ACM
2507		BATH HOUSE			Peeling		
2508		MAINTENANCE SHOP			Chipping		
2509		RADAR TOWER			Poor Cond	CT, PI	
2511		ADMINISTRATION BUILDING			Good Cond	No friable	FT, transite, mop board, ducts are suspect ACM
2513		DIESEL PLANT			Poor Cond		
2517		NMCR ADMINISTRATION			Peeling		
2520		TRAINING AND MEDICAL BUILDING			Good Cond	CT	FT also suspected ACM
2521		ARMORY			Good Cond	CT	FT also suspected ACM
2522		MOBILE MINE ASSEMBLY GROUP			Good Cond		
2523		NMCR ADMINISTRATION			Good Cond		
2524		SUPPLY AND COMPONENT TESTING			Good Cond	Elbows	
2530		MAINTENANCE STORAGE			Poor Cond		
2532		PAINT STORAGE			Poor Cond		
2533		STORAGE FOR MCRC			Peeling	CT, PI	FT also suspected ACM
2535		WATER TREATMENT FACILITY			Peeling		Roofing materials may be ACM
2552		SWIMMING POOL			Peeling		
2554		SUBSTATION			Unknown		
2555		ENTRANCE SIGN			Unknown		
2557		SEWAGE PUMPING STATION			Unknown		

E Hazardous Sites and Substances Inventory

Table E-1 SOLID WASTE MANAGEMENT UNITS (SWMUs) AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
A	1	DRMO Staging Area	DRMO	Hazardous waste, lead	RFI
A	2	Lead Contaminated Area (DRMO)	DRMO	Lead	RFI
G	3	Pesticide Mixing Area	Building 249	Pesticides	RFI
F	4	Pesticide Storage Building	Building 381	Pesticides	RFI
E	5	Battery Electrolyte Treatment Area	Building 1797 Area	Acids	RFI
G	6	Public Works Storage Yard (Old Corral)	SW of Building 380	Hazardous waste, lead	RFI
G	7	PCB Transformer Storage Yard	SW of Building 380	PCBs	RFI
G	8	Oil Sludge Pit	Parking Area SW of Building 161	Oil sludges	RFI
H	9	Closed Landfill	Open Area Between Bainbridge and West Road	Miscellaneous RCRA regulated wastes	RFI
G	10	Hazardous Waste Storage Facility, Building 246	Building 246	Miscellaneous RCRA regulated wastes	RCRA closure required; RFI
G	11	Caustic Pond	SE of Building 190	Calcium hydroxide	RFI
I	12	Old Fire Fighting Training Area	Southern Tip of Base	Petroleum	RFI
H	13	Current Fire Fighting Training Area	Building 1303 Area	Petroleum	RFI
H	14	Chemical Disposal Area	South of Building 1897	Miscellaneous RCRA regulated wastes	RFI

Key at end of table.

Table E-1 SOLID WASTE MANAGEMENT UNITS (SWMUs) AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
H	15	Incinerator	South of Building 1843	Miscellaneous paper	RFI
I	16	Paint Storage Bunker	West of Building X-55	Paint	RFI
H	17	Oil Spill Area	North of Building 61	Oil	RFI
E	18	PCB Spill Area	Building 1278	PCBs	RFI
G	19	Solid Waste Transfer Station	West of Least Tern Lane	Miscellaneous RCRA regulated wastes	RFI
H	20	Waste Disposal Area	NE of Building 903	Miscellaneous RCRA regulated wastes	RFI
E	21	Old Paint Storage Center (Waste Paint Storage Pad)	Facility 1275 Area	Paint	RFI
E	22	Old Plating Shop Wastewater Treatment System	Alley Between Building 5 and 44	Cyanide, metals, cadmium, chromium	RFI
E	23	New Plating Shop Wastewater Treatment System	Building 226	Miscellaneous RCRA regulated wastes	RFI
G	24	Waste Oil Reclamation Facility	Fuel Farm Area	Oil	RFI
E	25	Building 44, Old Plating Operation	Building 44	Cyanide, metals, cadmium, chromium	RCRA closure of process tanks completed in 1994; RFI
E	26	Waste Storage Area, Building 64-40, Pier C	Pier C, Building 64-40	Miscellaneous RCRA regulated wastes	RFI

Key at end of table.

Table E-1 SOLID WASTE MANAGEMENT UNITS (SWMUs) AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
E	27	Waste Storage Area, East End Pier C	East End of Pier C	Paint	RFI
E	28	Waste Storage Area, West End Pier C	West End of Pier C	Paint	RFI
G	29	Building X-10	Building X-10	Miscellaneous RCRA regulated wastes	RFI
E	30	Satellite Accumulation Area, Building 13	Building 13	Miscellaneous RCRA regulated wastes	RFI
E	31	Waste Paint Storage Area, Dry Dock 5	Dry Dock 5	Paint	RFI
E	32	Waste Paint Storage Area, Building 195	Building 195	Paint	RFI
E	33	Waste Paint Storage Area, West End, Dry Dock 2	Dry Dock 2	Paint	RFI
G	34	MWR, Southwest of Building X-10	SE of Building X-10	Miscellaneous RCRA regulated wastes	RFI
G	35	Building X-12	Building X-12	Miscellaneous RCRA regulated wastes	RFI
F	36	Building 68, Battery Shop	Building 68	Sulfuric acid	RFI
L	37	Sanitary Sewer System	Basewide	Miscellaneous RCRA regulated wastes	RFI
A	38	Miscellaneous Storage	North of Building 1605	Petroleum products, miscellaneous	CSI

Key at end of table.

<p align="center">Table E-1</p> <p align="center">SOLID WASTE MANAGEMENT UNITS (SWMUs) AT</p> <p align="center">NAVAL BASE CHARLESTON, SOUTH CAROLINA</p>					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
A	39	POL Drum Storage	North of Building 1604	Petroleum products	RFI
A	40	Building 1640 DRMO	Building 1640	Hazardous wastes	RU
A	41	Battery Charging Facility (1624)	North of Building 1602C	Lead, sulfuric acid	RFI
A	42	Asphalt Plant/Tanks Boiler Plant	NW of Building 1803	Asphalt products, solvents, degreasers	CSI
A	43	Publications and Printing Plant Building 1628	Building 1628	Chromium, lead	CSI
C	44	Coal Storage, South Side of Noisette Creek	South Side of Noisette Creek	Coal, coal byproducts	RFI
C	45	Building NH 51 SAA 54	Building NH-51	Photograph fixer, developer	NFI
C	46	NH-21 SAA T02	Building NH-21	Miscellaneous RCRA regulated wastes	NFI
C	47	Burning Dump	Building NSC 64, 66, 67 Area	Unknown	CSI
C	48	Building 234 SAA 55	Building 234	Photochemicals, ammonia, EDTA containers	NFI
C	49	Battery Charging Station (219)	South of Building 198	Lead, sulfuric acid	RFI
D	50	Building NH-1 SAA 63	Building NH-1	Miscellaneous RCRA regulated wastes	NFI
D	51	Building NH-1 SAA 64	Building NH-1	Miscellaneous RCRA regulated wastes	NFI

Key at end of table.

<p align="center">Table E-1</p> <p align="center">SOLID WASTE MANAGEMENT UNITS (SWMUs) AT</p> <p align="center">NAVAL BASE CHARLESTON, SOUTH CAROLINA</p>					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
D	52	Building NH-1 SAA 67	Building NH-1	Miscellaneous RCRA regulated wastes	NFI
E	53	Building 212 SAA 29	Building 212	Paint, miscellaneous RCRA regulated wastes	RFI
E	54	Abrasive Blast Area of SWMU 21	Building 1275 Area	Blast residue	RFI
E	55	Building 59 SAA 05 (former Boiler Shop)	Building 59	Paint, glue, miscellaneous RCRA regulated wastes	NFI
E	56	Building 2A SAA 25	Building 2A	Adhesives, miscellaneous RCRA regulated wastes	RFI
E	57	Building 35 SAA 02	Building 35	Petroleum, miscellaneous RCRA regulated wastes	NFI
E	58	Building 35 SAA 49	Building 35	Acids/metals, alcohol	NFI
E	59	Building 35 SAA 56	Building 35	Miscellaneous RCRA regulated wastes	NFI
E	60	Building 2 <90 Day Accumulation Area 04	Building 2	Petroleum products, solvents, paint, miscellaneous	NFI
E	61	Building 228 <90 Day Accumulation Area 22	Building 228	Adhesives, miscellaneous RCRA regulated wastes	NFI
E	62	Building 226 SAA 08	Building 226	Plaint solution, metal hydroxide, miscellaneous plating, supplies/debris	NFI
E	63	Battery Charging Station (73)	Building 226 Area	Lead, acids	CSI

Key at end of table.

Table E-1 SOLID WASTE MANAGEMENT UNITS (SWMUs) AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
E	64	Building 56 SAA 07	Building 56	Paint, miscellaneous RCRA regulated wastes	NFI
E	65	Building 221 Lead Storage	Building 221	Lead	RFI
E	66	Pier C SAA 30	Pier C	Miscellaneous RCRA regulated wastes	NFI
E	67	Building 3 Gauge Room	Building 3	Mercury	RFI
E	68	Building 5 SAA 21	Building 5	Adhesives, paints, miscellaneous RCRA regulated wastes	NFI
E	69	Building 5 SAA 24	Building 5	Paint, adhesives	NFI
E	70	Building 5 Dip Tank Area	Building 5	Copper, chromium, arsenate, miscellaneous RCRA regulated wastes	RFI
E	71	Building 44 SAA 70	Building 44	Petroleum products, metal shavings	NFI
E	72	Building 44 <90 Day Accumulation Area	Building 44	Plating chemical wastes	CSI; investigate with SWMU 25
E	73	Building 43 SAA 01	Building 43	Petroleum products, used coolants, solvents	NFI
E	74	Building 57 SAA 34	Building 57	Tetrachloroethylene, miscellaneous RCRA regulated wastes	NFI
E	75	Dry Dock 1 SAA 78	Dry Dock 1	Miscellaneous RCRA regulated wastes	NFI

Key at end of table.

Table E-1 SOLID WASTE MANAGEMENT UNITS (SWMUs) AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
E	76	Building 32 SAA 73	Building 32	Miscellaneous RCRA regulated wastes	NFI
E	77	Dry Dock 2 SAA 31	Dry Dock 2	Miscellaneous RCRA regulated wastes	NFI
E	78	Dry Dock 2 SAA 61	Dry Dock 2	Paint, miscellaneous RCRA regulated wastes	NFI
E	79	Building 250 SAA 53	Building 250	Miscellaneous RCRA regulated wastes	NFI
E	80	Building 194 SAA	Building 194	Miscellaneous RCRA regulated wastes	CSI
E	81	Building 1245 <90 Day Accumulation Area 23	Building 1245	Paint, trichloroethane	NFI
E	82	Building 177 SAA 69	Building 177	Solvents, xylene, petroleum products, adhesives, preservatives acetone, MEK, toluene	NFI
E	83	Building 9	Building 9	PCBs	RFI
E	84	Building 9 Lead Storage	Building 9	Lead	RFI
E	85	Building 9 SAA 03 (Boiler Shop)	Building 9	Paint debris, petroleum products, miscellaneous RCRA regulated wastes	NFI
E	86	Building 9 <90 Day Accumulation Area 36	Building 9	Paint, petroleum products, miscellaneous RCRA regulated wastes	NFI

Key at end of table.

Table E-1 SOLID WASTE MANAGEMENT UNITS (SWMUs) AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
E	87	Building 80 <90 Day Accumulation Area 11	Building 80	Paint, petroleum products, mercury, chelating agents, miscellaneous RCRA regulated wastes	NFI
E	88	Building 25 SAA 72	Building 25	Miscellaneous RCRA regulated wastes	NFI
E	89	Building 13 SAA 10	Building 13	Acids/Metals, lab samples, freon 133	NFI
E	90	Building 13	Building 13	Petroleum products	NFI
E	92	Building 13	Building 13	Petroleum products	NFI
E	92	Building 13 SAA 15	Building 13	Acids/metals (ICP waste)	NFI
E	93	Building 13 SAA 43	Building 13	Miscellaneous RCRA regulated wastes	NFI
E	94	Building 13 SAA 45	Building 13	Acids, acids/metals, alcohol	NFI
E	95	Building 13 SAA 46	Building 13	Used analytical reagents	NFI
E	96	Building 236 <90 Day Accumulation Area 14	Building 236	Petroleum products, paint, miscellaneous RCRA regulated wastes	NFI
E	97	Building 236 <90 Day Accumulation Area 20	Building 236	Petroleum products, solvents, miscellaneous RCRA regulated wastes	RFI

Key at end of table.

Table E-1

**SOLID WASTE MANAGEMENT UNITS (SWMUs) AT
NAVAL BASE CHARLESTON, SOUTH CAROLINA**

Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
E	98	Pier G SAA 28	Pier G	Paint, miscellaneous RCRA regulated wastes	NFI
E	99	Pier G SAA 74	Pier G	Miscellaneous RCRA regulated wastes	NFI
E	100	Building 218 SAA 26	Building 218	Petroleum products, paint, sandblast grit, miscellaneous RCRA regulated wastes	RFI
E	101	Building 1173 SAA 62	Building 1173	Miscellaneous RCRA regulated wastes	NFI
E	102	Building 79 Floor	Building 79	Mercury	RFI
E	103	Pier H SAA 77	Pier H	Miscellaneous RCRA regulated wastes	NFI
E	104	Deleted from SWMU List	---	---	---
E	105	Building 1518 SAA 33	Building 1518	Petroleum products, paint, miscellaneous RCRA regulated wastes	NFI
E	106	Blast Area Dry Dock 3	Dry Dock 3	Blast residue	RFI
F	107	Chapel CBU-412 SAA T03	Chapel CBU-412	Miscellaneous RCRA regulated wastes	NFI
F	108	Building 187 SAA 27	Building 187	Miscellaneous RCRA regulated wastes	NFI

Key at end of table.

Table E-1 SOLID WASTE MANAGEMENT UNITS (SWMUs) AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
F	109	Abrasive Blast Media Storage Hoppers	Structures 1364, 1365, 1393	Blast media	CSI
F	110	Building 1346 SAA 57	Building 1346	Paint, grease, miscellaneous RCRA regulated wastes	NFI
F	111	Building 241 SAA 37	Building 241	Paint, miscellaneous RCRA regulated wastes	NFI
F	112	Building 241 SAA 38	Building 241	Paint, miscellaneous RCRA regulated wastes	NFI
F	113	Building 241 SAA 47	Building 241	Paint, petroleum products, miscellaneous RCRA regulated wastes	NFI
F	114	Building 241 SAA 48	Building 241	Petroleum products	NFI
F	115	Building 242 SAA 44	Building 242	Petroleum products	NFI
F	116	Building 1175 SAA 65	Building 1175	Petroleum products	NFI
G	117	Building 249 SAA 52	Building 249	Paint	NFI
G	118	Pier Z SAA	Pier Z	Miscellaneous RCRA regulated wastes	NFI
G	119	Garbage Handling (1271)	End of 336	Unknown	CSI
G	120	Pier M Laydown	Pier M	Paint, lead	CSI

Key at end of table.

Table E-1 SOLID WASTE MANAGEMENT UNITS (SWMUs) AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
H	121	Building 801 SAA 76	Building 801	VOCs, metals, petroleum products, miscellaneous RCRA regulated wastes	RFI; investigate with SWMU 9
H	122	Building 636 SAA 58	Building 636	Paint, grease, miscellaneous RCRA regulated wastes	NFI
H	123	Building 636 SAA 59	Building 636	Paint, grease, miscellaneous RCRA regulated wastes	NFI
H	124	Building 1508 SAA 60	Building 1508	Paint, petroleum products, miscellaneous RCRA regulated wastes	RFI; investigate with AOC 653
H	125	Building 202 SAA 16	Building 202	Mercuric nitrate waste	NFI
H	126	Building 202 SAA 17	Building 202	Mercuric nitrate waste	NFI
H	127	Building 202 SAA 18	Building 202	Mercuric nitrate waste	NFI
H	128	Building 202 SAA 40	Building 202	Mercuric nitrate waste	NFI
H	129	Building 202 SAA 41	Building 202	Spent OBA canisters	NFI
H	130	Building 202 SAA 42	Building 202	Petroleum products	NFI
H	131	Building NS-67 SAA 66	Building NS-67	Miscellaneous RCRA regulated wastes	NFI
H	132	Building 61 SAA 06	Building 61	Mercuric nitrate	NFI
H	133	Building 61 SAA 09	Building 61	Borate cupric sulfate, petroleum products	NFI

Key at end of table.

Table E-1

**SOLID WASTE MANAGEMENT UNITS (SWMUs) AT
NAVAL BASE CHARLESTON, SOUTH CAROLINA**

Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
H	134	Building 61 SAA 68	Building 61	Miscellaneous RCRA regulated wastes	NFI
H	135	Building 61 SAA 71	Building 61	Miscellaneous RCRA regulated wastes	NFI
H	136	Building NS-53 SAA 19	Building 53	VOCs, metals, petroleum products, miscellaneous RCRA regulated wastes	CSI
H	137	Building 675 SAA 35	Building 657	Miscellaneous RCRA regulated wastes	NFI
H	138	Building 1776 SAA 51	Building 1776	VOCs, waste oil, petroleum products, antifreeze	CSI
I	139	Pier P SAA	Pier P	Miscellaneous RCRA regulated wastes	NFI
I	140	Pier P SAA	Pier P	Miscellaneous RCRA regulated wastes	NFI
I	141	Pier Q SAA T01	Pier Q	Paint, miscellaneous RCRA regulated wastes	NFI
I	142	Building 681 SAA 50	Building 681	Paint, miscellaneous RCRA regulated wastes	NFI
E	143	Building 222	Building 222	Mercuric nitrate, silver nitrate, chromium, lead, flammable waste, chromium/lead paint	RFA in progress

Key at end of table.

Table E-1

**SOLID WASTE MANAGEMENT UNITS (SWMUs) AT
NAVAL BASE CHARLESTON, SOUTH CAROLINA**

Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
E	144	Building 222 SAA, CNSY Permit #88	Building 222	Flammable waste, lead, cadmium, brass, bronze	RFA in progress
E	145	Building 13A	Under Building 13A	Mercury	RFA in progress
E	146	Building 13A SAA, CNSY Permit #85	Building 13A	Lead	RFA in progress
E	147	Pier C SAA, CNSY Permit #79	Pier C	Waste oil, aerosol cans	RFA in progress
E	148	Shop 71 Storage Area SAA, CNSY Permit #81	Building 174	Paint, thinner	RFA in progress
E	149	Metal Trades SAA at DD #5, CNSY Permit #T06	DD #5 Area	Paint waste, thinner	RFA in progress
E	150	Brazwell Shipyard SAA at Pier Z, CNSY Permit #93	Pier Z	Paint waste, thinner	RFA in progress
E	151	Building 79A	Building 79A	Mercuric nitrate, silver nitrate, chromium, lead, flammable waste, chromium/lead paint	RFA in progress
E	152	Building 79A SAA, CNSY Permit #92	Building 79A	Flammable waste, lead brass, bronze	RFA in progress
E	153	Pier H SAA, CNSY Permit #91	Pier H	Paint waste, thinner	RFA in progress
E	154	Pier H SAA, CNSY Permit #80	Pier H	Waste oil, aerosol cans	RFA in progress
E	155	Building 101	Building 101	Chromium, lead, flammable waste, chromium/lead paint	RFA in progress
E	156	Dry Dock #4 Pierside SAA, CNSY Permit #86	DD #4 Area	Lead, PPE	RFA in progress

Key at end of table.

Table E-1

**SOLID WASTE MANAGEMENT UNITS (SWMUs) AT
NAVAL BASE CHARLESTON, SOUTH CAROLINA**

Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
E	157	Building 1278 <90 Day Area, CNSY Permit #83	Building 1278	Contaminated soils and groundwater	RFA in progress
G	158	Pier M Quaywal SAA, CNSY Permit #82	Pier M Quaywall	Paint waste	RFA in progress
H	159	Building 610 SAA, CNSY Permit #90	Building 610	Aerosol cans	RFA in progress
I	160	Port Services SAA, CNSY Permit #95	Pier S Quaywall	Waste oil	RFA in progress
K	161	Vehicle Maintenance Shop, (Marine Reserve Center)	Fenced Area Building 2505	Petroleum products, solvents, degreasers	RFA in progress
K	162	Sludge Drying Field (MOMAG 11)	Near Building 2509	Heavy metals	RFA in progress
K	163	Concrete Pit Area 10' x 10' x 2' (MOMAG 11)	100' North Building 2513	Paint, thinner	RFA in progress
K	164	Blasting Operation (MOMAG 11)	Building 2556	Heavy metals	RFA in progress
K	165	Paint Operation (MOMAG 11)	Building 2556	Paint	RFA in progress
K	166	Sewer System (Naval Annex)	Naval Annex	Heavy metals, solvents	RFA in progress
K	167	MOMAG 11 <180 Day Storage Area CNSY Permit #94	MOMAG 11	Paint, thinner, heavy metals, batteries, petroleum products	RFA in progress
E	168	Building 2A, Temp. Metal Storage Area	Building 2A	Zinc	RFA in progress
E	169	Building 57, Touch up Painting Operations	Building 57	Paint	RFA in progress
E	170	DD #1 Area, PCB Removal Operations	Head DD #1	PCBs	RFA in progress
E	171	DD #2 Area, PCB Removal Operations	Head DD #2	PCBs	RFA in progress

Key at end of table.

Table E-1 SOLID WASTE MANAGEMENT UNITS (SWMUs) AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
E	172	Building 80, Steam Cleaning Operations	Outside Building 80	Grease, solvents	RFA in progress
E	173	Building 1297, Storage Area	Building 1297	Lead	RFA in progress
F	174	Air Compressor Oil Blowdown	Building 97	Petroleum products	RFA in progress
F	175	Crane Painting Area	Near Building 1277	Paint	RFA in progress
H	176	Transformer Oil Leak	Near Building 657	Petroleum products	RFA in progress
I	177	RTC-4 Oil Spill	RTC-4	Petroleum products	RFA in progress
H	178	Site of Apparent Transformer Fire Outside of Building NS-53	Building NS-53	PCBs, wood preservatives	RFA in progress
E	179	Building 222 SAA, Shipping and Receiving, Permit #90	Building 222	Flammable wastes, lead, cadmium, brass, bronze	RFA in progress
E	180	Building 222 SAA, New Fuel Enclosure, Permit #102	Building 222	Flammable wastes, lead, cadmium, brass, bronze	RFA in progress
E	181	Metal Trades SAA, Permit #99	Pier C	Lead, petroleum products, solvents	RFA in progress
E	182	Ships Forces SAA, Permit #102	Pier C	Lead, petroleum products, solvents	RFA in progress
E	183	Building 79A Less-Than-90-Day Accumulation Area, Permit #89	Building 79A High Bay	Lead, petroleum products, brass, bronze, chromium, cadmium	RFA in progress
E	184	Building 79A SAA, Permit #106	Building 79A High Bay	Brass, bronze	RFA in progress
E	185	UST Waste Sludge collection, Less-Than-90-Day Accumulation Area, Permit #107	Building 1024, Outside	Waste oils	RFA in progress

Key at end of table.

Table E-1

**SOLID WASTE MANAGEMENT UNITS (SWMUs) AT
NAVAL BASE CHARLESTON, SOUTH CAROLINA**

Study Zone	SWMU Number	SWMU Name	Location	Waste Type	Status
C	186	Paint Chip Sample Collection, SAA Permit #105	Building 58, Outside	Lead, chromium	RFA in progress
E	187	Paint Waste SAA #101	Head of Drydock #5, North Side	Lead, petroleum products, solvents	RFA in progress
E	188	Paint Waste SAA #103	South Side of Drydock #5, Midway	Lead, petroleum products, solvents	RFA in progress
E	189	Building 222 Fenced in Area, SAA #108	Building 222, Outside West End	Brass, bronze, cadmium	RFA in progress
E	190	Pier J SAA Permit #110	Pier J	Brass, bronze, cadmium, lead	RFA in progress
E	191	Pier G SAA Permit #98	Pier G	Paint, waste oil	RFA in progress
E	192	Building 222, SAA permit #111	Building 222	Brass, cadmium, lead, bronze, chromium	RFA in progress
E	193	Building 79A Fenced Area, SAA, Permit #107	Building 79A, Fenced Area	Brass, bronze	RFA in progress
K	194	Building 197, Paint Storage	Building 197, Short Stay	Paint waste	NFI
K	195	Building 207, Flammable Storage	Building 207, Short Stay	Petroleum Products, Solvents	NFI

Note: The validity of field work currently being done on these SWMUs is subject to EPA/SCDHEC approval of the RFI work plan.

Key at end of table.

Table E-1 (Cont.)

Key:

CBU = Construction Battalion Unit.
 CSI = Confirmatory sampling investigation.
 DRMO = Defense Reutilization and Management Office.
 ICP = Inductively coupled plasma.
 MEK = Methyl ethyl ketone (2-butanone).
 MWR = Morale, welfare, and recreation.
 NFI = No further investigation (recommendation).
 OBA = Oxygen Breathing Apparatus.
 PCB = Polychlorinated biphenyls.
 POL = Petroleum, oil, and lubricants.
 RCRA = Resource Conservation and Recovery Act.
 RFA = RCRA facility assessment.
 RFI = RCRA facility investigation.
 RU = Regulated unit.
 SAA = Satellite accumulation area.
 VOCs = Volatile organic compounds.

Source: U.S. Department of Navy 1994.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
J	500	UXO Site Between Piers S and T	Between Piers S and T	Two Mark 47 TORPEX Loaded Depth Bombs	CSI
J	501	UXO Site in Cooper River East of Buildings X54 and X55	Cooper River	Two Mark 47 TORPEX Loaded Depth Bombs	CSI
J	502	UXO Site Between Piers G and H	Between Piers G and H	Three 5-inch Unexploded Shells at About 40 Feet Below MWL	CSI
H	503	UXO Site South of Building 665	South of Building 665	Two Mark 17 Depth Bombs	CSI
V	504	Railroad System	Basewide	Petroleum Products Batteries Lead Acid Coal Unknown suspected RCRA regulated wastes	RFI
A	505	Creosote Cross-Tie/Ballast Storage Area	Area of Building 1803	Creosote	CSI
A	506	Flammable Storage Shelter (1629)	North of Building 1603	Unknown suspected RCRA regulated wastes	CSI
B	507	Oil Storehouse (1010)	Golf Course Area (1410)	Petroleum Products	CSI
B	508	Incinerator (19)	North of Avenue D	Petroleum Products Metals	CSI
C	509	Hazardous/Flammable Storage (1079)	Along West Property Border	Unknown suspected regulated wastes	CSI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
C	510	General Purpose Laboratory (NH-21)	Avenue H	Methyl Ethyl Ketone Acetone Methylene Chloride Solvents	CSI
C	511	Oil House (16)	Building 672 Area	Petroleum Products	CSI
C	512	Incinerator Building (67)	SW of Storage Area	Petroleum Products Metals Combustion Products	CSI
C	513	Parking Lot/Old Morgue	SE of Building NH-45	Formaldehyde Miscellaneous	CSI
C	514	Flammable Storage (1813)	South of NH-55	Unknown suspected RCRA regulated wastes	CSI
C	515	Building 51 Incinerator (1920s-1930s), Paint Shop (1930s-1940s)	Area West of Building 233	Paints Solvents Unknowns	CSI
C	516	Building 233 Wash Area	Building 233	Acid Petroleum Products	RFI
C	517	Building M-192 Range	Building M-192	Lead Metals Miscellaneous RCRA regulated wastes	CSI
C	518	Coal Bins	Building M-1257 Area	Coal and Coal Byproducts	CSI

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Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
C	519	Boilerhouse (1081) (not in use)	South of Turnbull Avenue	Petroleum Products	CSI
C	520	Garbage House (M-1051)	North of 2nd Street	Unknown suspected RCRA regulated wastes	CSI
C	521	Oil Storehouse (1052)	Building M-1262 Area	Petroleum Products	CSI
C	522	Grease and Wash Building (M-1252)	SW of Building 198	Petroleum Products	CSI Investigate with Sewer System
C	523	Gas Station Storage (M-1234)	South of Building 198	Petroleum Products	CSI
D	524	Substation (415A)	Along Carolina Avenue	PCBs Petroleum Products	NFI
E	525	Building 223 Paint Shop	Building 223	Paint	NFI
E	526	Building 212 Paint Area	Building 212	Paint	RFI
E	527	Transformer House (24)	Building 2 Area	PCBs Petroleum Products	NFI
E	528	Building 59 Steam Cleaning Shop	Building 59	Grease Waste Oil Miscellaneous RCRA regulated wastes	CSI Investigate with Sewer System
E	529	Building 2A Coating and Spray Systems	Building 2A	Aluminum Miscellaneous RCRA regulated wastes	RFI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
E	530	Paint and Oil Storage (Facility 35)	Building 35	Paints Possible Solvents Petroleum Products	CSI
E	531	Switching Substation (459)	West of Building 35	PCBs Petroleum Products	NFI
E	532	Building 2 Copper Tank	Building 2	Copper	CSI
E	533	Switching Substation - Formerly Building 460/1965 (138)	SE Corner of Building 2	PCBs Petroleum Products	NFI
E	534	Latrine (27)	East of Building 2	Organic Wastes Heavy Metals	NFI
E	535	Latrine (28)	East of Building 2	Organic Wastes Heavy Metals	NFI
E	536	Switching Substation (460)	North of Building 74	PCBs Petroleum Products	NFI
E	537	Substation (342)	Attached to Building 228	PCBs Petroleum Products	NFI
E	538	Building 6 Forge Shop	Building 6	Lead	RFI
E	539	Building 6	Building 6	Zylo	CSI
E	540	Plating Plant - Formerly Building 226/1975 (73)	NE Corner of Building 3	Heavy Metals Cyanides	CSI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
E	541	Oil Storage Shops (38)	Building 226 Area	Petroleum Products	CSI
E	532	Building (22) Acetylene Plant (1922-1930s) Paint Shop (1930s-1950s)	Building 226 Area	Acetylene Paints Possible Solvents	CSI
E	543	Plating Plant Formerly Building 226 (NSC1026)	Building 3 Area	Zinc Inorganic Acids	CSI Investigate with SWMU 23
E	544	Building 221 Pickling Plant	Building 221	Lead Miscellaneous RCRA regulated wastes	RFI
E	545	Building 3 Surface Coating	Building 3	Epoxy Miscellaneous RCRA regulated wastes	NFI
E	546	Galvanizing Shop (1025)	Between South End of Buildings 56 and 74	Zinc Inorganic Acids	CSI
E	547	Building 5 Fiberglass Shop	Building 5	Fiberglass Process Resins Miscellaneous RCRA regulated wastes	CSI
E	548	Building 5 Elevator	Building 5	Hydraulic Oil	CSI
E	549	Scrap Yard (1054)	Building 5 Area	Metals Miscellaneous RCRA regulated wastes	NFI
E	550	Boilerhouse for Marine Corps (1111)	North of Pier 314 and East of 1041A	Petroleum Products	CSI
E	551	Boilerhouse, Pier 314 (1119)	SE of Building 3	Petroleum Products	CSI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
E	552	Galvanizing Shop (1030)	NE Corner of Dry Dock #1	Zinc Inorganic Acids	CSI
E	553	Service Station (136)	South of Building 1295	Petroleum Products Solvents Degreasers	CSI
E	554	Paint Shop/Locomotive Shed (1003)	North of Building 1021	Heavy Metals Acetone Xylenes Toluene	CSI
E	555	Latrine and Substation, Pier 314 (29)	SE Side of Building 1119	Organic Wastes Heavy Metals PCBs	NFI
E	556	Dry Dock Discharges	Dry Docks	Miscellaneous RCRA regulated wastes	RFI
E	557	Latrine (1020)	South of Dry Dock #1	Organic Wastes Heavy Metals	NFI
E	558	Substation (77)	South of Dry Dock #1	PCBs Petroleum Products	NFI
E	559	Central Power Station (32)	Building 32	Petroleum Products Combustion Products PCBs	CSI
E	560	Disinfector (34)	South of Building 32	Unknown	CSI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
E	561	Substation (451B)	Along Carolina Avenue	PCBs Petroleum Products	NFI
E	562	Substation (84)	South of Dry Dock #2	PCBs Petroleum Products	NFI
E	563	Locomotive House (37)	Building 177 Area	Solvents and Degreasers	CSI
E	564	Disposal Pit Building 80	North Side Building 80	Unknown suspected RCRA regulated wastes	CSI Investigate with Sewer System
E	565	Temporary Coal Bin (1006)	End of Dry Dock #5	Coal and Coal Byproducts	NFI
E	566	Building 194	Building 194	Paint	CSI Investigate with SWMU 80
E	567	Substation (75)	East of Building 195	PCBs Petroleum Products	NFI
E	568	Latrine, Pier 317 (26)	Beside Building 75	Organic Wastes Heavy Metals	NFI
E	569	Oil and Gasoline Service Station (40)	Attached to SW Corner of Building 30	Solvents Degreasers Petroleum Products	CSI
E	570	Coal Storage Area	Building 1199 Area	Coal Byproducts	CSI
E	571	Building 177 Paint Booths	Building 177	Paint	NFI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
E	572	Building 177 Motor Area	Building 177	Petroleum Products Miscellaneous RCRA regulated wastes	RFI
E	573	Building 177 Anodizing	Building 177	Miscellaneous RCRA regulated wastes	
E	574	Building 9 Fuel Tank	Building 9	Petroleum	RFI
E	575	Substation (454)	Attached to Building 80	PCBs Petroleum Products	NFI
E	576	Oil and Paint Storehouse/Print Office (1012)	Building 80 Area	Heavy Metals Paints Solvents	CSI
E	577	Building 25 Paint Booth	Building 25	Paint	NFI
E	578	Transportation Shop and Garage (25)	SW of Building 177	Petroleum Products Lead Solvents Degreasers	CSI UST Removal Underway
E	579	Paint Shop (1035)	East of Building 1178	Paint Heavy Metals	CSI
E	580	Pattern and Electric Shop (10)	South of Building 10	Lead Zinc Solvents Degreasers	CSI
E	581	Waterfront Substation and Radio Lab (20)	Building 236 Area	PCBs	NFI

Key at end of table.

Table E-2 AREA OF CONCERN (AOC) SUMMARY AT NAVAL BASE CHARLESTON, SOUTH CAROLINA					
Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
E	582	Substation (455)	North of Building 236	PCBs Petroleum Products	NFI
E	583	NE Corner Building 236	Building 236	Freon Petroleum Products	CIS
E	584	Substation (451 H)	South of Dry Dock #5	PCBs Petroleum Products	NFI
E	585	Latrine for Enlisted Men (36)	End of 5th Street and Near End of Pier 317-D	Organic Wastes Heavy Metals	NFI
E	586	Temporary Powerhouse (1014)	SE of Building 11	PCBs	NFI
E	587	Aviation Gas Storage (21)	East of Building 11	Petroleum Products Lead	CSI
E	588	Building 218 Paint Booth	Building 218	Paint	NFI
E	589	Substation (85)	By River Road	PCBs Petroleum Products	NFI
E	590	Alley Between Buildings 79 and 1760	Between 79 and 1760	Acetone Petroleum Products	CSI Possible Source of Sewer System
E	591	Unused Contaminated Storage (1760)	Deleted from AOC List	Unknown	
E	592	Asbestos Shredding Shelter (1225)	South of Building 1760	Asbestos As Waste	CSI
E	593	Incinerator (1711)	Building 79 Area	Organic Wastes Heavy Metals	CSI
E	594	Radcon Training & Offices (190)	South of 317-E	Unknown	NFI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
E	595	Ordnance Wrecking Magazine/Oil & Paint Storehouse (101B)	SW of Building 101	Petroleum Products Paints Heavy Metals	CSI
E	596	Torpedo Storage (101) Machine Shop Galvanizing Plant	Building 101 Area	Explosives Propellants Solvents/Degreasers Miscellaneous	CSI
E	597	Substation (91)	North of 317-F	PCBs Petroleum Products	NFI
E	598	Sonar Dome Area	End of Pier J	Blast Residue Paint Miscellaneous	CSI
E	599	Pier J Pump House	Pier J	Diesel Fuel	RFI
E	600	Coaling Pier/Oil Pier (318-L)	317-F Area	Petroleum and Coal Products	NFI
E	601	Oil Pier (319)	End of 317-F	Petroleum Products	NFI
E	602	Substation (95)	SW of Dry Dock #3	PCBs Petroleum Products	NFI
E	603	Burning Dump	Dry dock #3 Area	Unknown	CSI
E	604	Substation (96)	SW of Dry Dock #4	PCBs Petroleum Products	NFI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
E	605	Building 1278 Southwest Area	Building 1278	Miscellaneous	CSI
F	606	Building 187 Paint Booth	Building 187	Paint	NFI
F	607	Building 1189 Dry Cleaning	Building 1189	Miscellaneous	RFI
F	608	Paint Storage (1263)	SW of building 1346	Paints Heavy Metals	CSI
F	609	Building 1346 Gas Station	Building 1346	Ethylene Glycol Petroleum Products	RFI
F	610	Building 241 Paint Booth	Building 241	Paint	NFI
F	611	Grease Rack and Hobby Shop (1264)	Football Field Area	Petroleum Products Solvents Degreaser Methylene Chloride	CSI
F	612	Substation (94)	SE of Building 1172	PCBs Petroleum Products	NFI
F	613	Between Buildings 241, 242, 255 (Old Locomotive Shop)	Between Buildings 241, 242 and 255	Petroleum Products	CSI
F	614	Building 242 Paint Booth	Building 242	Paint	NFI
F	615	Parking Lot/North Northeast of Building 240	Parking Lot NNE of Building 240	Epoxies and Resins	CSI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
F	616	Paint Shop (1202)	SW of Dry Dock #3	Paint Heavy Metals	CSI
F	617	Building 69 Former Galvanizing Area	Building 69	Metals Miscellaneous	CSI
F	618	Switching Substation (466)	NW of Building 68	PCBs Petroleum Products	CSI
F	619	Oil Storage Yard	Area of Buildings 1824, 1836, 316, 381	Petroleum Products	CSI
F	620	Building 68 Battery Shop	Building 68	Acid Metals	CSI Investigate with SWMU 36
F	621	Building 68 Battery Cracking Area	Building 68	Lead Acids	CSI
G	622	Ballast Water Treatment Facility (392)	North of Oil Tanks	Organic Wastes Heavy Metals	CSI Investigate with AOC 626
G	623	Stripper Concrete Tank (148)	SW of Building 98	Acetone Methylene Chloride	CSI
G	624	Fuel Oil Booster Pumphouse (98)	West of Hobson Avenue	Petroleum Products	CSI Investigate with AOC 626
G	625	Sludge Pumphouse (3901 B)	NW of Oil Tanks	Organic Wastes Heavy Metals	CSI
G	626	NSC Fuel Farm	Fuel Farm Area	Petroleum	RFI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
G	627	Oil Spill Area at Hobson and Viaduct Road	Hobson and Viaduct Roads	Petroleum Products	CSI Investigate with AOC 626
G	628	Building 68 Southeast Area	Building 68	Paint Blast Residue	CSI
G	629	Tank Truck/Car Loading/Unloading Facility (3913)	South of Dry Dock #4	Petroleum Products Waste Oil	CSI Investigate with AOC 626
G	630	POL Sampling/Test Building (3914)	South of Dry Dock #4	Petroleum Products	CSI Investigate with AOC 626
G	631	Fueling Pier K (325)	End of 13th Street	Petroleum Products	NFI
G	632	Substation (124)	South of Building 325	PCBs Petroleum Products	NFI
G	633	Substation (451 C)	West of Building 224	PCBs Petroleum Products	NFI
G	634	Flammable Storage Shelter (1814)	SW of Building 224	Unknown	CSI
G	635	Paint and Oil Storehouse (3902)	Building 3902	Paints Petroleum Products Solvents Degreasers	CSI
G	636	Torpedo Magazine (160, 161, 162)	Building 161	Explosives Propellants	CSI
G	637	Dump Area	Building 161 Area	Unknown	CSI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
G	638	Torpedo Workshop (132)	Building 132	Explosives Propellants	CSI
G	639	Alcohol Storage	Building 132 Area	Alcohol	CSI
G	640	Fuel Oil Pier (322)	South of 337	Petroleum Products	NFI
G	641	Stripper Pumphouse (39-K)	Base of 336	Acetone Methylene Chloride	CSI
G	642	Pistol Range	Parking Lot Buildings X-10, X-12, 1431	Lead Explosives	CSI
G	643	Substation (125)	Base of 327	PCBs Petroleum Products	NFI
G	644	Substation (1793)	North of 327	PCBs Petroleum Products	NFI
G	645	Transformer Vault (3906 S)	Chicora Tank Farm	PCBs Petroleum Products	NFI
G	676	Operational Storage (3906 Q)	Chicora Tank Farm	Unknown	CSI
G	647	Transformer Vault (3906 R)	Chicora Tank Farm	PCBs Petroleum Products	NFI
H	648	Transformer Vault	West of Building 672	PCB Oils	NFI
H	649	Braswell Shipyards, Inc. Storage Area	East of Building 672	Unknown	CSI
H	650	Metal Trades, Inc. Storage Area	East of Building 672	Unknown	CSI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
H	651	Sandblasters, Inc. Storage Area	East of Building 672	Unknown	CSI
H	652	Building 636 Spray Booth	Building 636	Paint	NFI
H	653	Building 1508 MWR Hobby Shop	Building 1508	Petroleum Products Paint miscellaneous	RFI
H	654	Septic Tank and Drain Field (1718) (abandoned)	Building 661 Area	Organic Wastes Heavy Metals	CSI Investigate with SWMU 9
H	655	Oil Spill Area Behind Base Exchange	Behind Base Exchange	Petroleum Products	CSI
H	656	Between Buildings 602 & NS-71	Between Buildings 602 & NS-71	Petroleum Products	CSI
H	657	Engine Overhaul Facility (645)	Building 645	Solvents Degreasers Petroleum Products Chlorofluorocarbons	NFI
H	658	Gas Storage (203)	East of Building 1303	Petroleum Products	CSI
H	659	Diesel Storage (14)	South of Hobson Avenue	Petroleum Products	CSI
H	660	Mosquito Control (31)	Building NS-6 Area	Pesticides	CSI
H	661	Explosives Storage	Area South of Building 601	Explosives	CSI
H	662	Building NS-54 Former Gas Station	Building NS-54	Petroleum Products	RFI
H	663	Gas/Diesel Pumping Station (851)	East of Building 1817	Petroleum Products	CSI

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Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
H	664	Transformer Vault (X33A)	Building NS-53 Area	PCBs Petroleum Products	NFI
H	665	Pyrotechnic Storage (159)	Building 1889 Area	Pyrotechnic Explosives	CSI
H	666	Fuel Storage (NS-45)	By Osprey Street	Petroleum Products	CSI
H	667	CBU-412 Vehicle Area	CBU-412	Petroleum Products	RFI
H	668	Hazardous Material Storage (1899)	SW of Building 1776	Oxygen Acetylene Welding Supplies	NFI
H	669	Building 1888 Range	Building 1888	Lead	RFI Investigate with SWMU 14
H	670	Field South of Building 1897	Field South of Building 1897	Lead Miscellaneous	RFI Investigate with SWMU 14
I	671	Meter House (Gasoline) (3905 G)	North of Hobson	Petroleum Products	CSI
I	672	Substation (126)	North of Hobson Avenue	PCBs Petroleum Products	NFI
I	673	Paint and Oil Storehouse (169) Flammable Storehouse	Building 169	Paints Petroleum Products Solvents Degreasers	CSI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
I	674	Paint Storage (RTC 4)	South of Building 330	Paints Heavy Metals Solvents	NFI
I	675	Fuel Oil Storage (NS-4)	Along Thompson Avenue	Petroleum Products	CSI
I	676	Incinerator	Area of Building NS-2	Unknown	CSI
I	677	Building NS-2 Grounds	Building NS-2	Petroleum Products	RFI
I	678	Firefighting School (2-V)	Building NS-1 Area	Petroleum Products	CSI
I	679	Wash Rack	Building NS-1 Area	Paint Petroleum Products	CSI
I	680	Building NS-26 NE Side	Building NS-26	Asbestos As Waste	CSI
I	681	Blast Booth Building 681	Building 681	Blast Residue	RFI
I	682	Building 681 Spray Booth	Building 681	Miscellaneous	NFI
I	683	Transformer Vault	Building 678 Area	PCB Oils	NFI
I	684	Old Pistol Range (1888)	Building 1888	Lead	RFI Investigate with SWMU 14
I	685	Smoke Drum (157)	Partridge Avenue and Juneau Avenue Area	Unknown	CSI
I	686	High Explosive Storage (54)	Building X-54	Explosives	NFI
I	687	High Explosive Storage (55)	Building X-55	Explosives	NFI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
I	688	High Explosive Storage (56)	Building X-56	Explosives	NFI
I	689	Southern Tip of Base	Southern Tip of Base	Dioxins	RFI
I	690	Spoils Area Road	South End of Base	Chemical Wastes Miscellaneous	CSI
J	691	Waterfront	Waterfront	Petroleum Products	RFI
J	692	Free Oil from Areas Along Cooper River	Waterfront	Petroleum Products	RFI
K	693	Fuse and Primer House (117)	Along Submerged Dredge Line	Petroleum Products Reactives	CSI
K	694	Former Naval Ammunition Depot	Clouter Creek Dredge Area	Explosives Heavy Metals	CSI
K	695	Electric Locomotive Shed (119)	SW of Building 117	Solvents Degreasers	CSI
K	696	Transformer Area at Building 2509 (MOMAG 11)	Outside Building 2509	Petroleum Products	RFA
K	697	Transformer Area at Building 2554 (MOMAG 11)	Near Building 2554	Petroleum Products PCBs	RFA
H	698	Transformer Area near Building 53	Near Building 53	Petroleum Products PCBs	RFA
L	699	Storm Sewer System	Basewide	Industrial Wastes	RFI

Key at end of table.

Table E-2

**AREA OF CONCERN (AOC) SUMMARY
AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	AOC Number	AOC Name	Location	Materials Released, Stored, or Disposed	Investigative Approach
C	700	Building 1646 Golf Maintenance Building	Building 1646	Pesticides Petroleum Products	RFI
E	701	Building 1141 Former McMillan Avenue Gas Station	Building 1141	Petroleum Products	RFI
E	702	Pier D paint accumulation	Pier D	Paint wastes	RFI
E	703	Pier F paint accumulation	Pier F	Paint waste	CSI
E	704	Building 301B paint accumulation	Building 301B	Paint waste	CSI

Key:

CBU = Construction Battalion Unit.
 CSI = Confirmatory Sampling Investigation.
 DRMO = Defense Reutilization and Management Office.
 ICP = Inductively coupled plasma.
 MEK = Methyl ethyl ketone (2-butanone).
 MWL = Mean Water Level.
 MWR = Morale, Welfare, and Recreation.
 NFI = No further investigation (recommendation).
 OBA = Oxygen Breathing Apparatus.
 PCB = Polychlorinated Biphenyls.
 POL = Petroleum, Oil, and Lubricants.
 RCRA = Resource Conservation and Recovery Act.
 RFA = RCRA Facility Assessment.
 RFI = RCRA Facility Investigation.
 RU = Regulated unit.
 SAA = Satellite Accumulation Area.
 UXO = Unexploded Ordnance.
 VOCs = Volatile Organic Compounds.

Source: U.S. Department of Navy 1994.

Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
C	NH 72	CNSY	Building NH72	1967	8.3K/Steel	Fuel Oil	In-use, Non-Regulated	May also be on lists as NS72
I	NS 2A	CNSY	Building NS2 Utilities	1967	25K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—
I	NS 2B	CNSY	Building NS2 Fuel Pumphouse	11 to 15 Years Old as of 10/91	495/Steel	Waste Oil	In-use, Non-regulated	Oil/Water Separator
H	NS 44A	CNSY	Building NS44	1967	25K/Steel	#2 Fuel Oil	In-use, Non-regulated	—
H	NS 44B	CNSY	Building NS44	Unknown	Unknown	Unknown	Unknown	Under investigation as of 10/91
Unknown	MS1	CNSY	Unknown	1982	550 Gal/FRP	Unknown	In-use	—
E	5C	CNSY	Building 5	0 to 5 Years Old as of 9/92	550/FRP	Calibration Fluid	Unknown	—
E	6B	CNSY	Building 6	1967	2.5K/Steel	#2 Fuel Oil	In-use	Heating Oil Tank WR/PCR-S003R; 10/25/91 Note to Deregister
E	6A	CNSY	Building 6	1967	2.5K/Steel	#2 Fuel Oil	In-use	Heating Oil Tank WR/PCR-S003R; 10/25/91 Note to Deregister
E	13A	CNSY	Building 13	1982	560/Steel	Unknown	Empty	Monitoring Wells Installed 1989
E	13B	CNSY	Building 13	1982	560/Steel	Unknown	Empty	Monitoring Wells Installed 1989

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Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
G	42	CNSY	Building 42	Unknown	500/Steel	Unknown	Empty, Non-regulated	10/25/91 Noted that further investigation was required
C	54	CNSY	Building 54	1967	560/Steel	Diesel	In-use	Emergency Generator, WR/PCR-S003R
E	56A	CNSY	Building 56	1967	4K/Steel	#2 Fuel Oil	In-use	Heating Oil Tank WR/PCR-S003R; 10/25/91 Note To Deregister
E	56B	CNSY	Building 56	1967	4K/Steel	#2 Fuel Oil	In-use	Heating Oil Tank WR/PCR-S003R; 10/25/91 Note To Deregister
E	240	CNSY	Building 240	1982	5K/Steel	Waste Oil	In-use	Groundwater Monitoring Wells in Place
E	241	CNSY	Building 241	6 to 10 Years Old as of 9/92	5K/Steel	Fuel Oil	In-use	Noted in 9/92 SPCC Plan
E	242	CNSY	Building 242	1989	6K/Fiberglass	Waste Oil	In-use	Interstitial Monitoring in Place
E	590A	CNSY	Building 590	1967	2K/Steel	Fuel Oil	In-use, Non-Regulated	Cathodic Protection Installed on Pipe in 1990
F	1141B	CNSY	Building 1141	> 20 Years Old	3K/Steel	Unknown	Abandoned Concrete-Filled	Property Abandoned; Ser 462.1/146 of April 11, 1989
F	1141A	CNSY	Building 1141	> 20 Years Old	10K/Steel	Unknown	Abandoned Concrete-Filled	Properly Abandoned; Ser 462.1/146 of April 11, 1989
Unknown	1169	CNSY	Unknown	> 20 Years Old	550/Steel	Unknown	Empty, Non-Regulated	PCR Submitted 5/89, to Be Removed 1991

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Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
E	1174	CNSY	Building 1174	> 20 Years Old	1K/Steel	Unknown	Empty, Non Regulated	PCR Submitted 5/89; To Be Removed
E	1175A	CNSY	Building 1175	1989	10K/Fiberglass	Gasoline	In-use	Auto Tank Gauging & Interstitial Monitoring in Place
E	1175C	CNSY	Building 1175	1989	10K/Fiberglass	Diesel	In-use	Auto Tank Gauging & Interstitial Monitoring in Place
E	1175B	CNSY	Building 1175	1989	10K/Fiberglass	Gasoline	In-use	Auto Tank Gauging & Interstitial Monitoring in Place
E	1279A	CNSY	Building 1279	1967	2.5K/Steel	Gasoline	Removed	WR/PCR-S003R; Site Assessment
E	1279C	CNSY	Building 1279	1982	3.5K/Steel	Gasoline	Removed	WR/PCR-S003R; Site Assessment
E	1279B	CNSY	Building 1279	1967	3.0K/Steel	Gasoline	Removed	WR/PCR-S003R; Site Assessment
A	191 NE	FISC	Building 191	1967	1.5K/Steel	#2 Fuel Oil	In-use, Non-Regulated	---
A	191 NW	FISC	Building 191	1967	1.5K/Steel	Unknown	Empty	10/25/91 Noted as Abandoned
G	224 (S)	FISC	Building 224	1972	5K/Steel	Fuel Oil	In-use, Non-Regulated	---

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Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
C	1136 (SW)	FISC	Building 1136	1977	375/Steel	Fuel Oil	In-use, Non-Regulated	FISC List Shows Only 1136NE (500 Gallon, #2 Fuel Oil); No 1136 SW Noted
G	3906O	FISC	Chicora	1943	1.15M/Concrete	Waste Oil	In-use For Storage	Chicora; Closure & Demolition Project #'s 5084B & S084C Apply
G	3906P	FISC	Chicora	1943	2.13M/Concrete	Diesel	Not-in-use	Chicora Tank Farm Taken Out of Service; Closure & Demolition Project #'s 5084B & S084C Apply
G	3906N	FISC	Chicora	1943	2.13M/Concrete	Empty	Not-in-use	Chicora Tank Farm Taken Out of Service; Closure & Demolition Project #'s 5084B & S084C Apply
G	3906K	FISC	Chicora	1943	2.13M/Concrete	Diesel	Not-in-use	Chicora Tank Farm Taken Out of Service; Closure & Demolition Project #'s 5084B & S084C Apply
G	3906M	FISC	Chicora	1943	2.13M/Concrete	Waste Oil	Not-in-use	Chicora Tank Farm Taken Out of Service; Closure & Demolition Project #'s 5084B & S084C Apply
G	3906L	FISC	Chicora	1943	2.13M/Concrete	Diesel	Not-in-use	Chicora Tank Farm Taken Out of Service; Closure & Demolition Project #'s 5084B & S084C Apply

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Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
H	202	FMWTC	Building 202	1967	5K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—
H	643B	FMWTC	Building 643	1982	1K/Fiberglass	Diesel	In-use	Possibly WR/PCR
H	643A	FMWTC	Building 643	1967	6K/Steel	#2 Fuel Oil	In-use, Non-Regulated	SPCC states 643A is 1K gallon, FRP, Gasoline, 0 to 5 Years Old
H	643C	FMWTC	Building 643	16 to 20 Years Old as of 10/91	550/Steel	Diesel	Removed 1990	No Contamination Found
H	647A	FMWTC	Building 647	1967	4K/Steel	#2 Fuel Oil	Filled with Concrete; Non-Regulated	Contamination Found In SOUTH DIV Assessment, 3 Groundwater Monitoring Wells in Place
H	NS 53	NAVSTA	Building NS53	1967	2K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—
I	NS 28A	NAVSTA	Building 28	1967	10K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—
I	NS 28B	NAVSTA	Building 28	1982	4K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—
H	NS 656	NAVSTA	Building 656	1972	5.8K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—
H	NS 657	NAVSTA	Building 657	1967	5K/Steel	#2 Fuel Oil	In-use, Non-Regulated	SPCC states two tanks exist, each 5K Gallons (657A & B), contain #2 Fuel Oil, 11 to 15 Years Old as of 9/92

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Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
H	NS 650	NAVSTA	Building 650	1967	1K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—
H	NS 653A	NAVSTA	Building 653	1982	6K/Steel	#2 Fuel Oil	In-use, Non-Regulated	10/25/91 Noted to Be Removed (WR #0-3280)
H	NS 654	NAVSTA	Building 654	1967	7K/Steel	#2 Fuel Oil	In use, Non-Regulated	SPCC States One Tank Exists; 1K Gallons, Steel, Fuel Oil; Two Vents Exist by Building
H	NS 79	NAVSTA	Building 79	1967	Unknown/Steel	#2 Fuel Oil	In use, Non-Regulated	—
I	NS 200	NAVSTA	Building 200	1967	1K/Steel; SPCC States 560 Gallon Capacity	#2 Fuel Oil	In-use, Non-Regulated	—
H	46C	NAVSTA	Building 46	> 20 Years Old	2.5K/Steel	Fuel	Abandoned, Non-Regulated	—
H	46A	NAVSTA	Building 46	> 20 Years Old	2.5K/Steel	Fuel	Abandoned, Non-Regulated	—
H	46D	NAVSTA	Building 46	> 20 Years Old	2.5K/Steel	Fuel	Abandoned, Non-Regulated	—
H	46B	NAVSTA	Building 46	> 20 Years Old	2.5K/Steel	Fuel	Abandoned, Non-Regulated	—
C	NH-52C	NAVSTA	Building NH52	1988	10K/FRP	Gasoline (Unleaded)	Unknown	Double Wall Construction; This May be 1175C
C	NH-52B	NAVSTA	Building NH52	1988	10K/FRP	Gasoline (Leaded)	Unknown	Double Wall Construction; This May be 1175B

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Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
C	NH-52A	NAVSTA	Building NH52	1988	10K/FRP	Diesel	Unknown	Double Wall Construction; This May be 1175A
H	53	NAVSTA	Building 53	> 20 Years Old	800/Steel	Possibly Fuel	Abandoned, Non-Regulated	—
H	640	NAVSTA	Building 640	1967	3K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—
G	641	NAVSTA	Building 641	1977	500/Steel; SPCC States 560 Gallons	#2 Fuel Oil	In-use, Non-Regulated	—
H	644	NAVSTA	Building 644	1977	5K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—
H	NS646	NAVSTA	Building 646	1967	2K/Steel	Diesel	Removed per EBS	Emergency Generator WR/PCR-S068C; There are two tanks at this Facility
H	NS646A	NAVSTA	Building 646	1991	2.5K/FRP	Diesel	In-use	Permit # C-10-GF-01775
H	NS661	NAVSTA	Building 661	1982 1992	5K/Possibly FRP or Steel? 5K/FRP	Diesel	In-use	Manual Tank Gauging; 10/25/91 Note Scheduled for Replacement in 12/91; Annual Tightness Test Completed
I	681B	NAVSTA	Building 681	Unknown	100 Gallon/Steel	Waste Oil	In-use, Non-Regulated	—
I	681 SIMA	NAVSTA	Building 681	6 to 10 Years Old as of 10/91	20K/Steel	#2 Fuel Oil	In-use, Non-Regulated	Master List Says Two Tanks Exist, 20K Gallon Capacity Empty No Residue

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Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
H	851B	NAVSTA	Building 851	1977	500/Steel	Diesel	Not in Use, Removal Unknown	WR/PCR-S068C; EBS States Two Tanks (2K & 3K Gallon) by Building 850; No Visible Evidence of Existing Tanks
H	851A	NAVSTA	Building 851	1977	500/Steel	Gasoline	Not in Use, Removal Unknown	WR/PCR-S068C; EBS States Two Tanks (2K & 3K Gallon) by Building 850; No Visible Evidence of Existing Tanks
F	1346J	NAVSTA	Building 1346	1991	10K/Fiberglass	Gasoline	In-use	Automatic Tank Gauging, Vapor Monitoring & Interstitial Monitoring in Place
F	1346C	NAVSTA	Building 1346	1977	10K/Steel	Gasoline	Removed 8/92	WR/PCR-S068C
F	1346B	NAVSTA	Building 1346	1977	10K/Steel	Gasoline	Removed 8/92	WR/PCR-S068C; RFI Scheduled
F	1346K	NAVSTA	Building 1346	1991	10K/Fiberglass	Gasoline	In-use	Automatic Tank Gauging, Vapor Monitoring & Interstitial Monitoring in Place; RFI Scheduled
F	1346F	NAVSTA	Building 1346	> 20 Years Old	4K/Steel	Unknown	Empty	10/25/91 Noted as 1346D-H Properly Abandoned per Blueprint H1346-33, 1978; SCDHEC Notified by Letter, Ser 462.3/373 on 31 May 90

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Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
F	1346G	NAVSTA	Building 1346	> 20 Years Old	4K/Steel	Unknown	Empty	10/25/91 Noted as 1346D-H Properly Abandoned per Blueprint H1346-33, 1978; SCDHEC Notified by Letter, Ser 462.3/373 on May 31, 1990
F	1346H	NAVSTA	Building 1346	> 20 Years Old	10K/Steel	Unknown	Empty	10/25/91 Noted as 1346D-H Properly Abandoned per Blueprint H1346-33, 1978; SCDHEC Notified by Letter, Ser 462.3/373 on May 31, 1990
F	1346A	NAVSTA	Building 1346	1972	10K/Steel	Gasoline	Removed 8/92	WR/PCR-5068C; RFI Scheduled
F	1346I	NAVSTA	Building 1346	1991	10K/Fiberglass	Gasoline	In-use	Automatic Tank Gauging, Vapor Monitoring & Interstitial Monitoring in Place
F	1346	NAVSTA	Building 1346	1967	500/Steel	Waste Oil	In-use	Manual Tank Gauging, Annual Tightness Test Completed
F	1346D	NAVSTA	Building 1346	> 20 Years Old	4K/Steel	Unknown	Empty	10/25/91 Noted as 1346D-H, Properly Abandoned per Blueprint H1346-33, 1978; SCDHEC Notified by Letter, Ser 462.3/373 on May 31, 1990

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Table E-3

**UST SPECIFICATIONS AND STATUS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
F	1346 E	NAVSTA	Building 1346	> 20 Years Old	4K/Steel	Unknown	Empty	10/25/91 Noted as 1346D-H, Property Abandoned per Blueprint H1346-33, 1978; SCDHEC Notified by Letter, Ser 462.3/373 on May 31, 1990
K	2509S	NAVSTA	Naval Annex	> 20 Years Old	5K/Steel	#2 Fuel Oil	Abandoned Non-Regulated	Possibly Listed As Two 4K-Gallon Tanks (#1 & #2) From 1958 & 1963
K	2517W	NAVSTA	Naval Annex	1967	2K/Steel	Fuel Oil	In-use, Non-Regulated	—
K	2517S	NAVSTA	Naval Annex	> 20 Years Old	4K/Steel	#2 Fuel Oil	Abandoned Non-Regulated	Possibly Listed As Two 4K-Gallon Tanks (#1 & #2) From 1958 & 1963
K	2524	NAVSTA	Naval Annex	> 20 Years Old	Unknown/Steel	#2 Fuel Oil	Abandoned Non-Regulated	—
I	3905 (C, D, G)	NAVSTA	Building 3905	Shown on 1955 Map	Unknown/ Possibly Steel	Possibly Gasoline or Avgas	Unknown	—
I	3905 (A, B, E, F)	NAVSTA	Building 3905	Shown on 1955 Map	Unknown/ Possibly Steel	Gas/Avgas	Unknown	—
I	RTC 1	RTC	Building RTC-1	Unknown	1K/Steel	#2 Fuel Oil	Removed, Non-Regulated	No Contamination Found
I	RTC 2	RTC	Building RTC-2	Unknown	1K/Steel	#2 Fuel Oil	Removed, Non-Regulated	Contamination Found in SOUTHDIR Assessment; Further Action Unknown

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Table E-3 UST SPECIFICATIONS AND STATUS AT NAVAL BASE CHARLESTON, SOUTH CAROLINA								
Study Zone	UST Number	Activity	Location	Year Installed	Capacity (gallons)	Product Stored	Status	Comments
H	61 (EG)	SUBTRAF AC	Building 61	Unknown	300/Steel	#2 Fuel Oil	Unknown	Electric Generator
H	6686	SUBTRAF AC	Building 686	1982	4K/Steel	#2 Fuel Oil	In-use, Non-Regulated	—

Source: U.S. Department of Navy 1994.

<p align="center">Table E-4</p> <p align="center">ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS</p> <p align="center">AT NAVAL BASE</p> <p align="center">CHARLESTON, SOUTH CAROLINA</p>		
Building Number	Building Name	Description/Comments
Naval Shipyard		
2	Ship Fitter Shop, Structural and Pipe Group Offices	None observed, although hazardous material tank compilation list indicates six tanks.
3	Inside Machine Shop	No permanent ASTs. One - 1,000-gallon - used oil Four - 100-gallon - dry cleaning solvent Two - 40-gallon - dry cleaning solvent
ARDM 3	Floating Dry Dock AOC 69	One - 1,000-gallon - diesel (?) Tank is not empty.
NS 5	Freshwater Storage (500,000 gallon)	One - 500,000-gallon - freshwater.
6	Forge Shop and Propeller Repair Shop	Eight - 264-pound - unknown. One - 1,000-gallon - unknown.
NS 6	Freshwater Pumphouse	One - unknown - fuel oil.
9	Temporary Service Shop SAA	One - 3,700-gallon - #2 fuel oil. One - unknown capacity - #2 fuel oil. One - 1,000-gallon - sulfuric acid, sludge and waste oils.
11	Miscellaneous Shop and Test Equipment Storage	A 1980 aerial photo indicates 24 or more probable ASTs around the periphery of the building. Documents indicate 28 storage tanks are in the yard, eight of which contain deionized water.
32	Central Power Plant	Two - 5,000-gallon - #2 fuel oil. Two - 5,000-gallon - deionized water. One - 114,000-gallon - diesel fuel. Three - 3,000-gallon - water softener.
SWMU 36	Ground Beneath Battery Shop (Electric Shop)	Four - 6,000-gallon - sulfuric acid.
NSC 39	Diesel Oil Pumphouse (Abandoned)	One ¹ - unknown capacity - fuel oil. One ¹ - unknown capacity - gasoline.
43	Central Tool Shop and Service Group Office	One - 500-gallon - unknown contents.

Key at end of table.

Table E-4		
ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS AT NAVAL BASE CHARLESTON, SOUTH CAROLINA		
Building Number	Building Name	Description/Comments
Naval Shipyard		
44	Old Plating Shop	Cleaning room. Several - 130 to 400-gallon - unknown contents. Plating room. Thirteen - 130 to 400-gallon - some had acid solutions. Chrome plating room. Twenty - 50 to 100-gallon - process tanks.
58	Dispensary	One - 30-gallon collection tank for radiation decontamination shower.
68	Battery Shop (Electric Shop) SWMUs 5 and 36 and AOCs 620 and 628	One - 6,000-gallon - 30% sulfuric acid. One - 6,000-gallon - 93.2% sulfuric acid.
NH 72	Heating Plant Building	One - unknown capacity - natural gas.
75	Substation	One - unknown capacity and unknown contents. Tank has been abandoned.
76	Human Resources and Safety/ Environmental Offices	One - 250-gallon capacity - ammonia.
77	Substation, Restroom, Shop Support Office	Two - 5,000-gallon capacity - ammonium hydroxide. Several - unknown capacity - deionized water. One - unknown capacity - nitrogen.
79	Nuclear Repair Facility	All tanks have been removed from this facility.
79 A	Nuclear Repair Facility	All tanks have been removed from this facility.
80	Outside Machine Shop	One 1,000-gallon - MAPP gas.
122	Transportation Motor Pool (Dispatcher)	In 1983 a temporary AST leaked JP-5, waste oil, and solvent.
123	Boiler House	One 500-gallon tank is located east of the facility.
127	Saltwater Pump house	One - unknown capacity - fuel oil. Tank is suspected but has not been located.

Key at end of table.

Table E-4 ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS AT NAVAL BASE CHARLESTON, SOUTH CAROLINA		
Building Number	Building Name	Description/Comments
Naval Shipyard		
136	Condensate Storage and Pumphouse	One - 45,000-gallon - water.
137	Oxygen Charging Station	One - unknown capacity - liquid oxygen. One - unknown capacity - nitrogen. One - unknown capacity - argon. Tanks believed to be empty.
177	Electric and Electronics Shop	One - 300-gallon - Isonel 31 varnish. One - 900-gallon - Isonel 31 varnish. One - 1,200-gallon - Isonel 31 varnish. One - 1,200-gallon - epoxylite. One - 200-gallon - kerosene.
190	Radcon Training and Offices Building	One ¹ - 1,500-gallon - generator fuel.
196	Water Tower Tank	One - unknown capacity - water.
197	Pumpwell for Dry Dock #5	One - unknown capacity cylinder - acetylene.
216	Electrical Shop Cable Warehouse	Pad exists, but no tank.
218	Missile Ordinance System Shop/ Nuclear Refueling Operations Shop	One ¹ - unknown capacity - hydraulic oil. Tank removed in 1989 due to unauthorized dumping.
222 and 688 (Refueling Complex)	Dry Dock Support Repair Facility and Refueling Facility	All tanks have been removed from this facility.
223	Paint Shop	Three - unknown capacity - compressed air.
226	Plating Plant and Pump, Valve, and Hydraulics	One - 300-gallon - fuel oil. One - 750-gallon - TEP/lube oil.
234	Engineering Management Building	One - unknown capacity - hot water rinse.

Key at end of table.

<p align="center">Table E-4</p> <p align="center">ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS</p> <p align="center">AT NAVAL BASE</p> <p align="center">CHARLESTON, SOUTH CAROLINA</p>		
Building Number	Building Name	Description/Comments
Naval Shipyard		
236	Operations Center and Pipefitting Shop	Numerous - unknown capacity - sodium hydroxide, hydrochloric acid, chromic acid etc. See complete list in survey.
239	Respirator Care Facility	One - 500-gallon - breathing air used in asbestos elimination room.
241	Crane Maintenance	One - 200-gallon - fuel oil. One - 200-gallon - diesel fuel.
242	Automobile Maintenance Building	Two - 250-gallon - motor oil. One - 200-gallon - diesel.
246	Mixed Waste Storage	Two - unknown capacity - propane.
250	Water Front Service Support Building	Numerous - unknown capacity (cylinders) - oxygen, argon, MAPP gas.
301	Dry Dock #1	One - unknown capacity - drain receptacle. One - unknown capacity - sludge oil.
302 B	Pumpwell	Three - 5,000-gallon - unknown contents. One - unknown capacity - nitrogen gas.
317 C	Industrial Pier "F"	One ¹ - unknown capacity - contaminated holding tank.
317 D	Industrial Pier "G"	Four - 1,500-gallon - sludge oil. Three - > 1,000-gallon - abrasive blast grit containers.
317 E	Industrial Pier "H"	Two - 1,500-gallon - sludge oil. One - 1,000-gallon - abrasive blast grit container. One - 2,800-gallon - sulfamic acid. One - 3,000-gallon - lithium bromide.
317 F	Industrial Pier "J"	Two - unknown capacity - ballast. Unknown - unknown capacity (portable) - sludge oil.
333	Pier "C"	Several portable AST - unknown capacity - liquid wastes.
352	Repair Wharf Charlie (C)	Several portable - unknown capacity - detergents, helium, bicarbonate of soda.
353	Bulkhead, Building ways.	One - 1,000-gallon - mechanical foam.

Key at end of table.

Table E-4 ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS AT NAVAL BASE CHARLESTON, SOUTH CAROLINA		
Building Number	Building Name	Description/Comments
Naval Shipyard		
377	Dredge Booster Station Number 2	Two - 1,000-gallon - diesel fuel. One - 500-gallon - diesel.
381	Storage/Administration Facility for Pest Control	One - 500-gallon - pesticide.
400	Public Works Facility	One - 250-gallon - diesel.
445 C	Gas Bottle Shed	Unknown number - unknown capacity (cylinders) - argon, nitrogen.
445 D	Gas Bottle Shed	Unknown number - unknown capacity (cylinders) - argon, nitrogen, oxygen.
1171	Material and Equipment Storage	Two - 20,000-gallon - reactor process water.
1278	Battery Processing Slab	One - unknown capacity - waste oil.
1295	Steam Condensate Storage Tank	One - 45,500-gallon - condensate water.
1298	Brick Storage (Shop 41)	Portable waste oil/sludge oil tanks parked in the vicinity of Building 1298.
1394	Pure Water Facility Tanks (Two)	Two - 5,000-gallon - Grade A nuclear water.
1803	Chlorinator Station	Prior asphalt plant in area had some storage tanks.
1806	Sewage Pumping Station	Nearby site has one 12,000-gallon tank of raw sewage lubricant.
1938	General Storage	One - 250-gallon - JP5 fuel.
3909	Fuel oil tank	One - 200,000-gallon #5 fuel oil.
4000	Shipboard Electronics System Evaluation Facility	One - 300-gallon - unknown contents.
4001	SESEF Flagpole	Two - unknown capacity - unknown contents.
NS 26	Administrative Building	One - 6,000-gallon - oil/sludge.
NH 49	Administrative Office (Navy Hospital)	One - 25-gallon - condensate.
NH 50	Administrative Office	One - 150-gallon - diesel fuel.

Key at end of table.

Table E-4		
ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS AT NAVAL BASE CHARLESTON, SOUTH CAROLINA		
Building Number	Building Name	Description/Comments
Naval Station		
X 54	Indoctrination Division	One - 2,500-gallon - empty. Contained boiler fuel in past, but no longer in use.
NH 61	Family Service Center	One - 1,050-gallon - #2 fuel oil.
NS 66	Barracks	One - 250-gallon - propane.
NS 67	Barracks	One - 500-gallon - propane. Listed in 1984 study, present location unknown.
NH 68	Medical Storehouse	One - 1,000-gallon - #2 fuel oil.
NS 71	Naval Exchange Cafeteria Restaurant/Snack Bar	One - 8,000-gallon - #5 fuel oil. One 295 - #5 fuel oil.
NS 79	Dispensary	One - unknown capacity - fuel oil.
M 82	NAVSTA Security	One - 200-gallon - fuel oil. Used for emergency generator.
NS 84	Naval Security Group Security	One - 1,010-gallon - #2 fuel oil. Tank no longer in use.
86	Cooper River Center	One - 6,000-gallon - #5 fuel oil.
200	Port Services with Tower	One 500-gallon - gasoline.
220	Gold Course Snack Bar Pro Shop	One 270-gallon - #2 fuel oil.
327	Pier "N"	Two - 21,000-gallon (combined??) - waste oil. Containers are trailers.
601	Fuel oil 12,000-gallon tank.	One - 12,000-gallon - fuel oil.
602	8,000-gallon fuel oil tank and AOC 656	One - 8,000-gallon - fuel oil.
636	Auto Hobby Shop	One - 500-gallon - waste oil. One 500-gallon - propane.
640	Steamers	One - 1,000-gallon - #2 fuel oil.
653	Enlisted Men's Barracks	One - 2,000-gallon - fuel oil.
655	Charleston Commissary	One - 2,500-gallon - fuel oil. Scheduled for replacement in October 1992. Remedial action unknown. One - 200-gallon - fuel oil.

Key at end of table.

Table E-4 ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS AT NAVAL BASE CHARLESTON, SOUTH CAROLINA		
Building Number	Building Name	Description/Comments
Naval Station		
660	Special Mag. Test Facility	One - 50-gallon - fuel oil. One - 80-gallon - fuel oil. One - 2,500-gallon - water.
661	Communications Center	One tank of diesel fuel was used on site during the replacement of a UST.
665	Consolidated Package Store	One - 2,500-gallon - fuel oil. One - 100-gallon - fuel oil.
675	Dental Clinic SWMU 137	Two - unknown capacity (small) - propane. Used to fuel emergency generator.
680	Fleet Maintenance Building (SIMA)	One - 50-gallon - diesel fuel.
682	Marina Office	One - 50-gallon - unleaded gasoline.
810	MWR Recycling Center	One - unknown capacity (barrel) - diesel.
824	Storage Shed	One - 200-gallon - propane.
M 1123	Storehouse and Boiler Room	One - 270-gallon - fuel oil.
NH 1137	Administrative Office	One - 1,010-gallon - #2 fuel oil.
M 1150	Counseling and Assistance Center	One - unknown capacity - diesel.
1177	Fire Station No. 3	One - 560-gallon - #2 diesel fuel.
1448	Filter House for Structure Number NS-59	One - 4,000-gallon - hot water tank.
1508	Car Wash and Hobby Shop	Two - 40-gallon - hydraulic fluid.
1646	Golf course Warehouse (Pesticide Storage and Mixing Warehouse)	One - unknown capacity - unknown contents - diesel fuel. Tank has been removed, exact former location unknown.
1708	Generator Building	One - unknown capacity - unknown. Was cleaned and sealed in 1988.
1776	Mechanics Shop	One - 300-gallon - used oil.
1795	General Storage	One - unknown capacity (tank) - propane.
1817	Facilities Maintenance	One - 250-gallon - waste oil.

Key at end of table.

Table E-4 ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS AT NAVAL BASE CHARLESTON, SOUTH CAROLINA		
Building Number	Building Name	Description/Comments
Fleet Industrial Supply Center		
1843	Incinerator	One - 500-gallon - propane.
14	Small Craft Ready Fuel Storage (not in use)	One - 5,200-bbl - diesel.
39 A	Ballast/Sludge Storage Tank 741,000-Gallon SWMU 24	One - 741,000-gallon - ballast/sludge Waste oil/ballast water line is used to separate waste oil from ballast water.
39 D	Ballast/Sludge Storage Tank 741,9000-Gallons SWMU 24	One 741,000-gallon - ballast/sludge Waste oil/ballast water line is used to separate waste oil from ballast water.
39 L	Diesel Tank, 6,500-Gallon	One - 6,500-gallon - diesel fuel. One - 6,500-gallon - empty.
148	Stripper - Concrete Tank	One - 2,200-gallon - fuel.
191	Controlled Humidity Warehouse	One - unknown capacity - water with oily sheen. One - 250-gallon - diesel fuel.
198	Supply Receiving, Shipping, and Administration Building	One - 2,000-gallon - diesel fuel. Use for emergency generator.
233	Battery Charging Facility	One - 250-gallon - propane.
290	Uninterruptable Power Source (UPS) Building	One - unknown capacity - diesel fuel.
1127	Preservation and Packaging Shop/ Bulk Storage Facility	Three - 30-gallon - solvent storage.
M 1136	Administrative Building	One - 500-gallon - #2 diesel fuel.
1138	Bin Issue Warehouse	One - 500-gallon - propane. One - 250-gallon - propane.
1226	Shop Repair Storage	One - unknown capacity - kerosene (?).
1449	Portable Field Office	NE of Building 1449 is a 259-gallon propane tank, and a utility shed housing acetylene tanks.
1503	Warehouse	One - 250-gallon - propane. Has been removed since 1984.
1514	Pumping Station	One - 500-gallon - diesel fuel.

Key at end of table.

Table E-4 ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS AT NAVAL BASE CHARLESTON, SOUTH CAROLINA		
Building Number	Building Name	Description/Comments
Fleet Industrial Supply Center		
1603	Material Turn In Site - (MTIS)	One - 1,000-gallon - propane
1605	Warehouse (DRMO) Repairables Processing	One - unknown capacity - propane. Tank not in use.
1614	Open Storage	One - unknown capacity - #5 fuel oil. Tank now empty.
1621	Storage Building	One - 1,000-gallon - propane.
1622	Polaris Materials Office (PMO)	One - 1,000-gallon - propane.
1623	Polaris Materials Office (PMO)	One - 500-gallon - propane.
1627	Storage Facility	Two - unknown capacity - propane tanks.
1631	Vehicle Storage Shed	One - 25-gallon - propane.
1640	Conforming Storage Facility	One - 500-gallon - fuel oil.
1647	Pumphouse for Building 1639	One - 70-gallon - fuel.
1653	Fuel Testing Laboratory	One - 500-gallon - propane.
3900 E	Diesel Oil Tank, 235,000-gallon	One - 235,000-gallon - diesel oil.
3900 F	Diesel Oil Tank, 235,000-gallon	One - 235,000-gallon - diesel.
3901 A	Ballast/Sludge Storage Tank, 103,000-gallons	One - 103,000-gallon - ballast/sludge waste.
3911	Lubricant Storage Tank, 50,000-gallon	One - 50,000-gallon - lubricant.
3912	Lubricant Storage Tank, 50,000-gallon	One - 50,000-gallon - 2190 TEP lube oil.
3913	Tank Truck/Car Loading/ Unloading/Shelter	Two - 500-gallon - waste oil. Waste oil from OWS.
3915	Fuel Oil Reclaimed Tank, 1,008,000-gallon	One - 1,008,000-gallon - fuel oil.
3916	Diesel Oil Tank 4,200,000-gallon	One - 420,000-gallon - diesel.
3917	Diesel Oil Tank 4,200,000-gallon	One - 420,000-gallon - diesel.

Key at end of table.

Table E-4 ABOVEGROUND STORAGE TANK SPECIFICATIONS AND STATUS AT NAVAL BASE CHARLESTON, SOUTH CAROLINA		
Building Number	Building Name	Description/Comments
Submarine Training Facility		
600	30,000-gallon Fuel Oil Tank	One - 30,000-gallon - fuel oil.
Fleet and Mine Warfare Training Center		
202 and 14224	Pumphouse/Potable Water Tank 202 and 1424	One - 5,000-gallon - water. One 10,200-gallon - unknown contents.
645	Engine Overhaul Facility	One - 52-gallon - diesel fuel. One - 60-gallon - lube oil. Former oil tank was located in Building 645; no further info found. Heating fuel AST to east for Building 647.
647	Training Building	One - 4,000-gallon - heating oil.
1306	Aboveground Storage Tank	One - 5,000-gallon - diesel fuel. One - 500-gallon - propane.
1309	Engine Room Mock-up Facility SWMU 13	To the west is one 5,000-gallon fuel oil tank and one 500-pound propane tank.
1310	Carrier Compartment Mock-up SWMU 13	One - 5,000-gallon - fuel oil.
1744	Field Medical Locker	One propane AST is to south.

Key:

- ¹ = Tank has been removed.
² = Approximately 30 propane tanks were removed or destroyed during Hurricane Hugo. Unknown if all lines were removed.
AOC = Area of Concern.
SESEF = Shipboard Electronics System Evaluation Facility.
SWMU = Solid Waste Management Unit.
NAVSTA = Naval Station.
DRMO = Defense Reutilization Management Office.

Source: U.S. Department of Navy 1994.

Table E-5

**ASBESTOS ABATEMENT PROJECTS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Contract/Order Number	Location	Actions Completed
N62467-92-D-1746, Order 001	Building NH-49, Rooms 3, 4, 5	Removed 125 LF from 1" and Smaller Pipe.
N62467-92-D-1746, Order 002	Building 10	Removed 70 LF from 2" and Smaller Pipe and 200 SF Spilled Material from Ground.
N62467-92-D-1746, Order 003	Shop 40, Between Boiler #10 and Boiler #11	Removed from Spill.
N62467-92-D-1746, Order 004	Building FBM-61, Pipe chase, Building 656	Removed from Spill, Removed from Duct Work.
N62467-92-D-1746, Order 005	Building 4, Building NH-52	Removed 66 LF from 3" Pipe and Smaller, Removed 50 LF from 1.5" Pipe and Smaller and Spilled Material.
N62467-92-D-1746, Order 006	Building FBM-61	Removed 200 SF of Spilled Material.
N62467-92-D-1746, Order 007	Building 191	Removed 66 LF from 3" and 6" Pipe.
N62467-92-D-1746, Order 008	Building 1138	Removed 300 SF of Tile.
N62467-92-D-1746, Order 009	Building 2517	Removed 160 SF from A/C Duct Joints and Floor.
N62467-92-D-1746, Order 010	Pier P	Removed 100 LF from 12" Pipe and 480 SF from Pipe Tunnel.
N62467-92-D-1746, Order 011	Pier F	Removed 46 SF from Spill, and 15 LF from 6" Pipe.
N62467-92-D-1746, Order 012	Building 1385	Removed 128 SF of Floor Tile.
N62467-92-D-1746, Order 013	Pier F Quaywall	Removed Spilled Material to a Depth of 3".
N62467-92-D-1746, Order 014	Building 81	Removed 340 LF from 5" Pipe and Smaller.
N62467-92-D-1746, Order 015	Building FBM-61	Removed 198 LF from up to 3" and 12" Pipe, a LP Tank and an Adapter Line.
N62467-92-D-1622, Order 001	Building 202	Removed from Various Pipe and Equipment.
N62467-92-D-1622, Order 002	Building NS-2, Building 66, Building 665, Building 89, Building 200	Various.

Key at end of table.

Table E-5

**ASBESTOS ABATEMENT PROJECTS AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Contract/Order Number	Location	Actions Completed
N62467-92-D-1622, Order 003	Building NH-49	Removed 100 LF from 3" Pipe and Smaller.
N62467-92-D-1622, Order 004	Building 2506	Removed 500 SF from A/C Ducting.
N62467-92-D-1622, Order 005	Building 656	Removed 95 SF from Duct in Janitor's Closet.
N62467-92-D-1622, Order 006	Dry Dock #2	Canceled—CNSY Shop 63 Completed Work.
N62467-92-D-1622, Order 007	Dry Dock #1	Canceled—CNSY Shop 63 Completed Work.
N62467-92-D-1622, Order 008	Building FBM-61	Removed 84 SF from Cooling Tower.
N62467-92-D-1622, Order 009	Building NS200	Removed 2,600 SF of Floor Tile and Mastic.
N62467-92-D-1622, Order 010	Building 221	Removed 143 SF from Sliding Door.
N62467-92-D-1622, Order 011	NH-1	Various.
N62467-92-D-1622, Order 012	Building NS43, Building 1179	Removed 10 LF from 5 Elbows in Galley; Removed 500 LF from 3" Pipe.
N62467-92-D-1622, Order 013	Building 9, Building 646, Steam Pipe near Building 1027, Steam Pipe to the East of Building 4, Steam Pipe to the East of Building 45	Removed 244 SF from Furnace #1 and 30 SF from Furnace #2, Removed 300 LF from Pipe Elbows, Removed from 12" Elbow, Removed from a 45° Bend and an Elbow, Removed 4 LF from 8" Pipe.
N62467-92-D-1622, Order 014	Building 1226, Building 32	Removed 50 LF from 2" and Smaller Pipe; Removed 126 LF from 8" and 10" Pipe.

Key:

FBM = Fleet Ballistic Missile

LF = Linear Feet.

SF = Square Feet.

Source: U.S. Department of Navy 1994.

Table E-6
PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA

Facility No.	Area	Comments
NS-1	Naval Station	Transformer of unknown PCB status leaked in 1989. PCB spill occurred around cement pad and transformer was cleaned and removed.
NS-2	Shipyard	Suspected PCB-containing capacitors thought to be on site.
ARDM 3	Shipyard	The use of portable transformers associated with this facility.
OL-4	Open Land Area 4	Adjacent facility had transformer with leak history.
5	Shipyard	Suspected PCB-containing hydraulic equipment associated with this facility.
OL-5	Open Land Area 5	Pole-mounted transformer of unknown PCB status on north end of site.
7	Shipyard	Suspected PCB-containing hydraulic equipment associated with this facility.
8/8A	Shipyard	One transformer containing approximately 200 gallons of PCB-contaminated oil is at this facility.
9	Temporary Service Shop	Building stores electrical power supply equipment, capacitors, transformers, and rectifiers. A 1981 report lists three PCB-containing transformers as having leaked. Numerous spills occurred from 1984 to 1988.
SWMU 9	Closed Landfill	Possible PCB-contaminated associated with sludge material disposed at this facility.
11	Shipyard	Two transformers of unknown status on site.
X-11	Naval Station	In 1980, 20 gallons of PCB-containing oil was spilled onto the ground. Immediate remedial action was taken.
25	Shipyard	Possible PCB-contamination due to past practices.
X-33 A	Shipyard	Four transformers of unknown status on site.
35	Shipyard	Shop 26 contains 28 rectifiers; each contains 70 gallons of PCB-contaminated oil.
NSC-39	Shipyard	Transformer of unknown status on site.
44	Shipyard	Transformer of unknown status on site.

Key at end of table.

Table E-6
PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA

Facility No.	Area	Comments
NS-44	Shipyard	Suspected PCB-containing electrical equipment associated with this facility.
46	Shipyard	Possible PCB-contamination resulting from an exploding capacitor containing high concentrations of PCB (1981).
NS-46	Naval Station	A 1980s survey listed transformers containing 100 to 500 gallons of PCB oil. In 1987, one transformer was found to be leaking, remedial action was taken. Transformer was removed in 1990.
NH-49	Naval Station	One transformer of unknown PCB status on NE side of building.
NH-50	Naval Station	Two transformers of unknown PCB status on site.
NS-53	Naval Station	Transformer housing on east side of building. Old transformer pad in southwest corner. Four pole-mounted transformers of unknown PCB status were removed in 1989.
NH-55	Naval Station	Eight transformers of unknown status on site, one of which has been taken out of service due to a leak.
X-55	Naval Station	One pole-mounted transformer in good condition on site. PCB status unknown.
59	Shipyard	Suspected PCB-containing hydraulic equipment associated with this facility. Suspected PCB-containing capacitors thought to have been on site in the past.
FBM-61	Submarine Training Facility	PCB-contaminated soil suspected due to past spill.
63	Shipyard	Transformer listed as containing PCB-containing oil (askarel) on site.
65	Naval Station	Transformer NS65A leaked and remedial action was taken. Transformer of unknown PCB status was removed in 1989.
NS-66	Naval Station	A 1979 report lists facility transformers as containing 30 gallons of PCBs. Remedial action unknown.

Key at end of table.

Table E-6
PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA

Facility No.	Area	Comments
NS-69	Shipyard	Transmitter of unknown status on site. Transformer reportedly containing 21 gallons of PCB-contaminated oil has been removed.
NS-71	Naval Station	Transformer on SE side tested at 323 ppm of PCB in a 1989 report. Transformer was removed and dark stains were located in the area. A 1990 report lists a transformer on site as containing >500 ppm PCB.
NH-72	Shipyard	No. 5 Fuel Oil tested as containing 50 ppm PCBs associated with this facility.
74	Shipyard	Electrical substation of unknown status on site.
75	Shipyard	Transformers of unknown status on site.
76	Shipyard	Transformer of unknown status on site.
77	Shipyard	Reported PCB-associated spills have occurred at this facility.
78	Shipyard	Cathodic protection rectifiers of unknown status on site.
79/79A	Shipyard	Two transformers of unknown PCB status on north side of building. PCB transformer removed in 1991.
M-82	Naval Station	Transformer No. 3008 on south side of site leaked in 1989 and was removed in 1990. Remedial action was taken on soil.
84	Shipyard	Transformers of unknown status associated with this site.
91	Shipyard	Transformer of unknown status on site.
94	Shipyard	Transformer of unknown status has been associated with this facility in past.
96	Shipyard	Transformer of unknown status has been associated with this facility in past.
97	Shipyard	PCB-associated spill occurred on a transformer pad in 1986. One leaking transformer contaminated the surrounding soil. Numerous transformers of unknown status are on site.

Key at end of table.

Table E-6
PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA

Facility No.	Area	Comments
101	Shipyard	One 55-gallon drum of cleanup debris from a cathodic rectifier. Transformer of unknown status is located on or associated with this site.
123	Shipyard	PCB spill - 3/18/93.
125	Shipyard	Transformers of unknown status are located on or associated with this site.
126	Shipyard	A 1991 inspection found a transformer leak. A 1987 report found transformer oil to contain 73 ppm. Oil stains on pad.
AOC 125	Bldg 600	Suspected PCB-contaminated soil.
174	Shipyard	Transformers of unknown status have been associated with this facility in the past.
177	Shipyard	Transformers known to contain PCB concentrations of 500 ppm associated with this facility in the past have been removed. Numerous spills have been reported, including a 1991 spill of 1/2 pint of PCB-oil.
180	Naval Station	One transformer of unknown PCB status on site.
185	Shipyard	Transformer of unknown status in on or associated with this site.
SWMU 53	Bldg 212 SAA	Transformer of unknown status is located on or associated with this site.
193	Supply Center	PCB contamination associated with AOC 122 and PCB storage associated with SWMU 7 may impact portions of building.
198	Supply Center	On gallon of PCB-containing oil spilled onto loading dock.
212	Shipyard	Transformer of unknown status is on or associated with this site.
216	Shipyard	Two transformers of unknown PCB status are located on or associated with this site.

Key at end of table.

Table E-6
PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA

Facility No.	Area	Comments
220	Naval Station	Transformer of unknown PCB status behind facility.
222	Shipyard	Transformers of unknown status are on or associated with this site.
223	Shipyard	Formerly used as temporary storage for PCB-associated materials.
234	Shipyard	Transformer known to contain PCB-contaminated oil is on or associated with this site.
235	Shipyard	Transformer of unknown status is on or associated with this site.
239	Shipyard	A pallet containing PCB/labeled equipment located on south side of the facility.
242	Shipyard	Suspect materials stored at this facility.
250	Shipyard	Transformer of unknown status is on or associated with this site.
302 B	Shipyard	Transformers known to contain PCB-contaminated oils are on or associated with this site.
303	Shipyard	PCB storage area between Dry Docks 3 and 4. Portable transformers are periodically used on site.
304	Shipyard	PCB storage area between Dry Docks 3 and 4. Portable transformers are periodically used on site.
317 A	Shipyard	Transformers and relay stations of unknown status are on or associated with this site.
317 C	Shipyard	Relay station of unknown status is on or associated with this site.
317 D	Shipyard	Transformers and relay stations of unknown status are on or associated with this site. Transformer No. 80907 is listed as leaking and containing PCB-contaminated oil. Status of this transformer unknown.
317 E	Shipyard	Transformers of unknown status are on or associated with this site. One transformer with a PCB warning label was on site.
317 F	Shipyard	Transformer tested in 1991 and contained >500 ppm PCB.

Key at end of table.

Table E-6
PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA

Facility No.	Area	Comments
325	Supply Center	PCB-containing oil was spilled in 1982. Remedial action was taken.
330	Naval Station	Facility houses substation at eastern end of pier.
332	Naval Station	One pole-mounted transformer of unknown PCB status listed as in good condition at entrance to pier.
333	Shipyard	In 1988, Switch 62A was tested at 50 ppm PCBs.
335	Naval Station	Pole-mounted transformers of unknown PCB status on bulkhead. Various PCB transformers removed in 1988.
351	Shipyard	Transformer of unknown status is on or associated with this site.
352	Shipyard	Transformers of unknown status have been associated with this facility in the past.
353	Shipyard	Relay stations of unknown status are on or associated with this site.
377	Shipyard	Transformer of unknown status is on or associated with this site.
380	Shipyard	Suspected PCB-containing hydraulic equipment associated with this facility.
451 A	Shipyard	Transformers of unknown status have been associated with this facility in the past.
451 B	Shipyard	Transformer at this facility has leaked oil that tested >50 ppm PCB. Transformers of unknown status have been associated with this facility in the past.
451 C	Shipyard	A spill occurred in 1985 in the area occupied by the foundations of the previous substation. Damage that occurred during Hurricane Hugo may have resulted in leaks. However, recent samples collected tested at <50 ppm PCB.
451 D	Shipyard	A leak in 1980 reportedly contained 150 ppm PCB. A leak also occurred in 1986 from a transformer associated with this facility.
451 K	Shipyard	A 1987 sample tested at 483.9 ppm PCB. No record of removal.

Key at end of table.

Table E-6
PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA

Facility No.	Area	Comments
454	Shipyard	Transformers of unknown status have been associated with this facility in the past.
458	Shipyard	In 1981, transformer 458 B contained PCB-contaminated oil and had visible leaks. Transformers 458 A and 458 B were both removed in 1990.
600	Submarine Training Facility	Suspected PCB-contaminated soil.
635	Naval Station	PCB-containing transformer leaked badly until 1982.
639	Naval Station	Undated document listed a transformer on site containing 49 gallons of PCB-containing oil. Unknown if these results are for the transformer north of the facility.
650	Naval Station	PCB-containing transformer in good condition on site.
655	Naval Station	Box compactor of unknown PCB status leaked hydraulic fluid. Transformer of unknown PCB status behind facility was stained from leakage.
657	Naval Station	Transformer on site leaked 5 gallons of oil onto pad and surrounding soil. Soil was excavated and drummed.
660	Naval Station	A 1982 inspection found leaking transformer oil. No PCB-containing equipment at present.
670	Naval Station	Three pole-mounted transformers in good condition on site.
680	Naval Station	Transformer of unknown PCB status located between Building 680 and 681.
686	Submarine Training Facility	Transformer of unknown status on site.
903	Shipyard	Numerous transformers are suspected in the landfill under the facility. A 1988 report list oil spills from four transformers, all <50 ppm PCB.
1138	Supply Center	Facility file lists that lighting fixtures contain PCB ballast.

Key at end of table.

Table E-6
PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA

Facility No.	Area	Comments
1141	Shipyard	Transformer known to contain PCB-contaminated oil has been associated with this facility in the past.
1171	Shipyard	Leaking transformers of unknown status have been associated with this facility in the past.
1173	Shipyard	In 1987, a slight leak occurred from a 100-KVA transformer.
1177	Naval Station	Spray from the explosion of a transformer of unknown PCB status at neighboring facility was strewn across SE wall of facility.
1241	Shipyard	Facility was formerly used to overhaul electrical equipment. At the time of the survey, capacitors suspected as containing PCB-contaminated oil were present.
M-1262	Naval Station	Transformer of unknown PCB status on site.
1271	Shipyard	Suspected PCB-containing hydraulic equipment associated with this facility.
1302	Fleet & Mine Warfare Training Center	Transformer of unknown status on site.
1308	Fleet & Mine Warfare Training Center	Transformer of unknown status on site.
1313	Fleet & Mine Warfare Training Center	Transformer of unknown status on site.
1346	Naval Station	One hydraulic lift of unknown PCB status on site.
1351	Fleet & Mine Warfare Training Center	Transformer of unknown status on site.

Key at end of table.

Table E-6
PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE
CHARLESTON, SOUTH CAROLINA

Facility No.	Area	Comments
1400	Shipyard	Transformers displaying a "danger" label are NE of the facility.
1426	Shipyard	Suspected PCB-containing electrical equipment associated with this facility.
1435	Shipyard	Suspected PCB-containing electrical equipment associated with this facility in the past.
1603	Supply Center	Facility has stored transformers, capacitors, and rectifiers of unknown PCB status.
1606	Supply Center	Facility has stored equipment of unknown PCB status.
1623	Supply Center	Two transformers on site tested as <50 ppm PCB. Facility may have stored transformers before 1985.
1627	Supply Center	Numerous transformers of unknown PCB status on east side of building.
1628	Supply Center	Transformers of unknown PCB status on site.
1717	Shipyard	Listed as temporary PCB storage area.
1720	Naval Station	One transformer of unknown PCB status listed on site. Could not be located during survey.
1723	Shipyard	Transformer of unknown status is on or associated with this site.
1812	Shipyard	Suspected as containing PCB-related equipment in the past, however, there was no indication at the time of the survey.
1819	Fleet & Mine Warfare Training Center	Transformer of unknown status on site.
1836	Shipyard	In 1988, soil was removed from beneath a skid-mounted transformer and replaced with fresh fill. Reports also indicated PCB spill in 1989 and 1990, however, no details were available.
1837	Naval Station	One pole-mounted transformer of unknown PCB status in SE corner of site.

Key at end of table.

Table E-6 PCB-AFFECTED AREAS AND EQUIPMENT AT NAVAL BASE CHARLESTON, SOUTH CAROLINA		
Facility No.	Area	Comments
1838	Shipyards	Transformers were stored on site and oil leaks developed. Following remedial action, PCB levels were <50 ppm. One pole-mounted was sampled and is in good condition.
3900 I	Supply Center	Three transformers located in NE corner. One does not contain PCBs and two are of unknown PCB status.
3902	Shipyards	PCB-containing material stored within the facility from 1960 to 1981.
3916	Supply Center	A 1985 report lists a rectifier containing 135 ppm PCB along fence line. A 1986 survey lists three pole-mounted transformers at south end of tank farm that have been assigned high priority for replacement.

Key:

PCB = Polychlorinated biphenyls.
 SWMU = Solid Waste Management Unit.
 SAA = Satellite Accumulation Areas.

Source: U.S. Department of Navy 1994.

Table E-7 RADIOLOGICAL FACILITIES CHARLESTON NAVAL SHIPYARD CHARLESTON, SOUTH CAROLINA			
Facility Designator	Description	Usage^a	Radiological Designator
Buildings^b			
2/2A	Building	Work/Storage	G-RAM
3	Building	Work/Storage	NNPP/G-RAM
9	Building	Work/Storage	NNPP
10	Building	Storage	(N)/G-RAM
11	Building	Work/Storage	NNPP/G-RAM
13 and Annex	Building	Work/Storage	NNPP/G-RAM
32	Building	Work/Storage	G-RAM
35	Building	Work/Storage	NNPP/G-RAM
44	Building	Work/Storage	NNPP/G-RAM
57	Building	Storage	G-RAM
58	Building	Work/Storage	NNPP/G-RAM
58 Annex	Building	Work/Storage	NNPP/G-RAM
59	Building	Work/Storage	G-RAM
59A	Building	Storage	NNPP
62	Building	Work/Storage	NNPP/G-RAM
69	Building	Storage	NNPP
79	Building	Work/Storage	NNPP/G-RAM
79A	Building	Work	NNPP
80	Building	Work	NNPP
95	Building	Storage	NNPP
96	Building	Storage	NNPP
101	Building	Storage	NNPP
177	Building	Work/Storage	NNPP/G-RAM
187	Building	Work	(N)/G-RAM
190	Building	Work/Storage	NNPP/G-RAM
217	Building	Work/Storage	NNPP/G-RAM

Key at end of table.

Table E-7 RADIOLOGICAL FACILITIES CHARLESTON NAVAL SHIPYARD CHARLESTON, SOUTH CAROLINA			
Facility Designator	Description	Usage^a	Radiological Designator
218	Building	Storage	NNPP/G-RAM
222	Building	Work	NNPP
239	Building	Storage	NNPP
241	Building	Storage	NNPP
246	Building	Storage	NNPP
247	Building	Work/Storage	(N)/G-RAM
590A	Building	Storage	NNPP
1024	Building	Work	NNPP
1171	Building	Work	NNPP
1173	Building	Work/Storage	NNPP/G-RAM
1174	Building	Work	NNPP
1175	Building	Storage	(N)/G-RAM
1267	Building	Storage	NNPP/G-RAM
1317	Building	Storage	NNPP
1426	Building	Storage	NNPP
1746	Building	Storage	NNPP
1760	Building	Work	NNPP
4000	Building	Work/Storage	G-RAM
26-13	Building	Work/Storage	G-RAM
380-207	Building	Storage	NNPP
J-22	Building	Work	G-RAM
Portable Facilities			
M-130 No. 3 Including Ventilation and Support Structure	Mobile Building	Work	NNPP
Anticontamination Clothing Frisking Trailer	Mobile Building	Work	NNPP
Building 1449	Mobile Building	Storage	G-RAM
Change House/Frisk Enclosures (2ea)	Mobile Building	Work	NNPP

Key at end of table.

Table E-7 RADIOLOGICAL FACILITIES CHARLESTON NAVAL SHIPYARD CHARLESTON, SOUTH CAROLINA			
Facility Designator	Description	Usage^a	Radiological Designator
Connex Boxes in Building 59 Fenced Area	Mobile Building	Storage	NNPP
Contaminated Storage Enclosure (2ea)	Mobile Building	Work	NNPP
Controlled Storage Enclosure No. 1	Mobile Building	Work	NNPP
Controlled Storage Enclosure No. 2	Mobile Building	Work	NNPP
Counting Lab Trailer	Mobile Building	Work	NNPP
Covered Brows (Numerous Sections)	Mobile Building	Work	NNPP
Demineralizer Shed	Mobile Building	Work	NNPP
Depot Modernization (DMP) Hull House	Mobile Building	Work	NNPP
Dockside Refueling Enclosure (DRE) No. 1	Mobile Building	Work	NNPP
Dockside Refueling Enclosure (DRE) No. 2	Mobile Building	Work	NNPP
Dockside Training Support Structure (DTSE)	Mobile Building	Work	NNPP
Dry Dock Staging Platforms	Mobile Platforms	Work	NNPP
M-130 No. 1 Including Ventilation and Support Structure	Mobile Building	Work	NNPP
M-130 No. 2 Including Ventilation and Support Structure	Mobile Building	Work	NNPP
New Fuel Enclosure/Inspection and Assembly Fixture Enclosure (NFE/IAF) and Associated Ventilation Skid	Mobile Building	Work	NNPP
Off Hull Nucleonics Labs (4ea)	Mobile Building	Work	NNPP
Off Hull Refueling Enclosure (OHRE)	Mobile Building	Work	NNPP
Pierside Cofferdam	Mobile Building	Work	NNPP
Portable Frisk Enclosures No. 1 and No. 2	Mobile Building	Work	NNPP
Radioactive Liquid Waste (RLW) Tank House	Mobile Building	Work	NNPP
Reactor Access Enclosure Annexes (2ea)	Mobile Building	Work	NNPP
Reactor Access Enclosure (RAE) No. 1 Including Coaming and Support Structure	Mobile Building	Work	NNPP
Reactor Access Enclosure (RAE) No. 3 Including Coaming and Support Structure	Mobile Building	Work	NNPP

Key at end of table.

Table E-7 RADIOLOGICAL FACILITIES CHARLESTON NAVAL SHIPYARD CHARLESTON, SOUTH CAROLINA			
Facility Designator	Description	Usage^a	Radiological Designator
Reactor Access Enclosure (RAE) No. 4 Including Coaming and Support Structure	Mobile Building	Work	NNPP
Steam Generator Chemical Cleaning Enclosure	Mobile Building	Storage	NNPP
S6G Training Base Enclosure	Mobile Building	Work	NNPP
Training Facility Support Stand (TFSS)	Mobile Building	Work	NNPP
Vertical Stairwells (4ea)	Mobile Building	Work	NNPP
Floating Structures			
Auxiliary Repair Drydocking Medium and Interior Spaces (ARDM) - No. 3	Floating Dry Dock	Work	NNPP
YFNX-20 SGI Barge	Barge	Work/Storage	(N)
YFN-1205 Barge	Barge	Storage	NNPP
Outside Areas			
Building 59 Fenced Area	Outside	Storage	NNPP
Building 79A Two Fenced Areas	Outside	Storage	NNPP
Building 101 Coverage Storage Area	Outside	Storage	NNPP
Building 222 Two Fenced Areas	Outside	Storage	NNPP
Parking Area E-5	Outside	Storage	NNPP
Concrete Slabs			
SLAB: Formerly Building 1267 (East side of Building 35)	Outside	Work	NNPP
SLAB: Dry Dock 5 S5W Refueling Foundations (3ea)	Outside	Work	NNPP
SLAB: Dry Dock 5 S6G Refueling Foundations	Outside	Storage	NNPP
SLAB: Temporary Storage Area for RLW Tanks from Building 222: (East of Building No. 222)	Outside	Storage	NNPP
SLAB: Temporary Storage Area for Refueling Buildings (East of Building No. 222)	Outside	Storage	NNPP
Dry Dock 5 SSG Refueling Foundations (3ea)	Outside	Storage	NNPP

Key at end of table.

Table E-7 RADIOLOGICAL FACILITIES CHARLESTON NAVAL SHIPYARD CHARLESTON, SOUTH CAROLINA			
Facility Designator	Description	Usage^a	Radiological Designator
Dry Docks			
Dry Dock 1	Outside	Work	NNPP
Dry Dock 2	Outside	Work	NNPP
Dry Dock 3	Outside	Work	NNPP
Dry Dock 4	Outside	Work	NNPP
Dry Dock 5	Outside	Work	NNPP
Dry Dock 5 Quay Wall RAM Storage Area	Outside	Storage	NNPP
Dry Dock 1 RAM Storage Area	Outside	Storage	NNPP
Dry Dock 2 RAM Storage Area	Outside	Storage	NNPP
Dry Dock 3 RAM Storage Area	Outside	Storage	NNPP
Dry Dock 4 RAM Storage Area	Outside	Storage	NNPP
Dry Dock 5 RAM Storage Area	Outside	Storage	NNPP
Dry Dock 4 Spent Fuel Storage Area	Outside	Storage	NNPP
Piers			
Pier C	Pier	Work	NNPP
Pier D	Pier	Work	NNPP
Pier F	Pier	Work	NNPP
Pier F-G Refueling/RAM Storage Area	Pier	Storage	NNPP
Pier G	Pier	Work	NNPP
Pier G-H Refueling/RAM Storage Area	Pier	Storage	NNPP
Pier H	Pier	Work	NNPP
Pier J Refueling/RAM Storage Area	Pier	Work	NNPP
Pier J-K Refueling/RAM Storage Area	Pier	Storage	NNPP
Rail Line Storage Areas			
Dry Dock 4 Rail Line Refueling/RAM Storage Area	Rail Line	Storage	NNPP
Ninth Street Rail Line and River Road (South of Ninth Street) Refueling/RAM Storage Area	Rail Line	Storage	NNPP

Key at end of table.

Table E-7 RADIOLOGICAL FACILITIES CHARLESTON NAVAL SHIPYARD CHARLESTON, SOUTH CAROLINA			
Facility Designator	Description	Usage^a	Radiological Designator
Pier G Rail Line Refueling/RAM Storage Area	Rail Line	Storage	NNPP
Pier J Rail Line Refueling/RAM Storage Area	Rail Line	Storage	NNPP
Power Plant Rail Line Refueling/RAM Storage Area	Rail Line	Storage	NNPP
Quay Wall Rail Line (between Piers F and G) Refueling/RAM Storage Area.	Rail Line	Storage	NNPP
River Road Rail Line (opposite Building 1174) Refueling/RAM Storage Area.	Rail Line	Work/Storage	NNPP
Thirteenth Street Rail Line (North of Thirteenth Street) Refueling/RAM Storage Area	Rail Line	Storage	NNPP
Radiological Facilities, Charleston Naval Base, Charleston, South Carolina			
Buildings^b			
133	Building	Long and Limited History	G-RAM
191	Building	Storage	G-RAM
198	Building	Storage	G-RAM
200	Building	Work/Storage	G-RAM
202	Building	Work/Storage	G-RAM
203	Building	Storage	G-RAM
224	Building	Storage	G-RAM
1138	Building	Long and Limited History	(G)
1156	Building	Work/Storage	NNPP
1169	Building	Storage	NNPP
1172	Building	Storage	G-RAM
1197	Building	Long and Limited History	G-RAM
1296	Building	Long and Limited History	G-RAM
1501	Building	Storage	G-RAM
1502	Building	Long and Limited History	(G)
1503	Building	Long and Limited History	(G)
1601B	Building	Long and Limited History	(G)

Key at end of table.

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Table E-7 RADIOLOGICAL FACILITIES CHARLESTON NAVAL SHIPYARD CHARLESTON, SOUTH CAROLINA			
Facility Designator	Description	Usage^a	Radiological Designator
1603	Building	Long and Limited History	(G)
1606	Building	Long and Limited History	(G)
1632	Building	Storage	G-RAM
1638	Building	Work/Storage	G-RAM
Buildings with Prefixes			
FB(M)-61	Building	Work/Storage	G-RAM
NS-26	Building	Work/Storage	G-RAM
NS-46	Building	Work	G-RAM
NSC-45	Building	Storage	(G)
NSC-66	Building	Storage	G-RAM
NSC-67	Building	Storage	G-RAM
X-10	Building	Work/Storage	G-RAM
Piers			
Pier A	Pier	Work/Storage	NNPP

^a Usage only in specified designated locations within listed areas.

^b Fenced areas adjacent to buildings are in the Outside Areas Group and are identified with that building's number.

Key:

() = Indicates quantity.

(G) = Low Potential G-RAM Activity (e.g., office/training spaces).

(N) = Low Potential NNPP Activity (e.g., office/training spaces, or areas previously surveyed and released).

G-RAM = General Radioactive Material.

NNPP = Naval Nuclear Propulsion Program.

Table E-8

**SELECTED ADJACENT PROPERTIES WITH KNOWN OR SUSPECTED RELEASES AT THE NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Facility Name	Facility Address	Facility Type	Observations/Comments	EDI Database Search Results
Amerada Hess Corp.	5150 Virginia Avenue North Charleston	Industrial	Large Tank Farm extending from the intersection of the RR and Virginia Avenue to the Cooper River. Located adjacent to the northern portion of the Navy Base (North Gate). Approximately 20 aboveground storage tanks (presumed petroleum products). Portion of the property is marsh. Illegal dumping of waste material Large Quantity Generator.	CERCLA Site (not on NPL) USEPA I.D. NO. SCD030090989 Discovery 7/23/94 Preliminary Assessment 3/16/92 RCRA Notifier Facility USEPA I.D. No. SCD030090989 Leaking UST Permit No. A-10-AAQ-14003
Koppers Co./Charleston	Charleston Heights North Charleston	Unknown	This facility was reported in the database search, however, it could not be located at the time of the survey. The area indicated in the database search is primarily a residential/commercial area.	CERCLA Site USEPA I.D. No. SCD980310239 Discovery 11/1/79 Hazard Ranking Determined 2/7/92 Proposal to NPL 2/7/92 Preliminary Assessment 6/1/80 Screening Site Inspection 3/31/86
Spruill Avenue 66	2748 Spruill Avenue and Clements Avenue North Charleston	Commercial	Gas Station/Convenience Store	SC Registered UST Permit No. N-10-NO-01621
Circle K # 8095	1947 Spruill Avenue North Charleston	Commercial	Gas Station/Convenience Store	Leaking UST Permit No. N-10-NO-01585
Eason Diving & Marine Contractors, Inc.	2668 Spruill Avenue. North Charleston	Commercial/Light Industrial	None	RCRA Notifier Facility USEPA I.D. No. SCD981027154
Texaco Lubricants Company	4950 Virginia Avenue North Charleston	Industrial	None	SARA III Toxic Release Inventory TRIS I.D. No. 29406TXCRF4950V NPDES I.D. No. SC0003026 SIC Code 2992
Chevron Oil Terminal	Chevron Oil Terminal Charleston	Waterway	Unknown amount of oil spilled in Shipyard Creek	Hazardous Material Spill Report No. 121946 Date of Spill: 6/25/92 Date Reported: 6/25/92

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Table E-8

**SELECTED ADJACENT PROPERTIES WITH KNOWN OR SUSPECTED RELEASES AT THE NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Facility Name	Facility Address	Facility Type	Observations/Comments	EDI Database Search Results
Clouter Creek Reach	Cooper River Charleston	Waterway	50 gallons of diesel spilled Navy used absorbents and boom to clean up spill	Hazardous Material Spill Report No. 99724 Date of Spill: 12/14/91 Date Reported: 12/14/91
None	Cooper River	Waterway	Unknown amount of No. 6 fuel oil spilled Oil affected marsh grass	Hazardous Material Spill Report No. 10351 Date of Spill: 8/14/87 Date Reported: 8/14/87
Cooper River	Cooper River by the Navy Yard	Waterway	Unknown amount of oil was spilled	Hazardous Material Spill Report No. 20057 Date of Spill: 5/1/90 Date Reported: 5/1/90
Shell Oil Company	Virginia Avenue North Charleston	Industrial	Large Quantity Generator Transporter Temporarily Closed	RCRA Notifier Facility USEPA I.D. No. SCD069315935 Permitted Clean Air Facility Air Quality Region: 199
Foster-Wheeler	1801 Shipyard Creek Road Charleston	Industrial	None	FINDS Facility USEPA I.D. No. SCD987592177 Permitted Clean Air Facility Air Quality Region: 199 NPDES I.D. No. SC0041173
Royster Transport Company	1011 Virginia Avenue North Charleston	Commercial	None	SC Leaking UST Permit No. N-10-NN-01642
Storage Building	4526 Spruill Avenue North Charleston	Commercial	None	SC Leaking UST Permit No. N-10-NN-14351 No. of Tanks: 4
Swygert's Shipyard, Inc.	Virginia Avenue North Charleston	Industrial	None	SC Leaking UST Permit No. A-10-AA-13722

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Table E-8

**SELECTED ADJACENT PROPERTIES WITH KNOWN OR SUSPECTED RELEASES AT THE NAVAL BASE
CHARLESTON, SOUTH CAROLINA**

Facility Name	Facility Address	Facility Type	Observations/Comments	EDI Database Search Results
Celanese Warner Soluble Polymers	246 East Bay Charleston	Industrial	Large Quantity Generator Facility is temporarily closed	RCRA Notifier Facility USEPA ID No. SCD003343209 FINDS Facility USEPA ID No. SCD003343209 <i>USEPA Program Office Listing for Facility</i> Toxic Substances ID No. 0058993 CERCLIS ID No. SCD003343209 Solid Waste ID No. SCD003343209 Air and Radiation ID No. 4501900028 Permitted Clean Air Facility Air Quality Control Region: 199
Koch Materials	1505 Greenleaf Street Charleston	Industrial	Large Quantity Generator SIC Code 2951	RCRA Notifier Facility USEPA ID No. SCD987566080 SARA III: Toxic Release Inventory Facility TRIS ID No. 29405KCHMT1505G
MacAlloy Corporation	1800 Pittsburgh Avenue Charleston	Industrial	Large Quantity Generator SIC Code 3313	RCRA Notifier Facility USEPA ID No. SCD003360576 SARA III: Toxic Release Inventory Facility TRIS ID No. 29405MCLLY1800P NPDES Permit No. SC0004014
W.R. Grace & Co.	1820 Harmon Street Charleston	Industrial	Agrichemical Plant SIC Code 2874 Large Quantity Generator	SARA III: Toxic Release Inventory Facility TRIS ID No. 29405WRGRC1820H RCRA Notifier Facility USEPA ID No. SCD003343191 CERCLA Site (Not on NPL) NPDES ID No. SC0041548

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Table E-8 SELECTED ADJACENT PROPERTIES WITH KNOWN OR SUSPECTED RELEASES AT THE NAVAL BASE CHARLESTON, SOUTH CAROLINA				
Facility Name	Facility Address	Facility Type	Observations/Comments	EDI Database Search Results
Shipyards River Terminal Coal Co.	1801 Milford Street Charleston	Industrial	Large Quantity Generator SIC Code 910227	RCRA Notifier Facility FINDS Facility USEPA ID No. SCD980710222 USEPA ID No. SCD106262140 <i>USEPA Program Office Listing for Facility</i> Solid Waste ID No. SCD10626140 Air and Radiation ID No. 4501900027

Source: U.S. Department of Navy 1994.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

P.O. Box 12559

217 Fort Johnson Road

Charleston, South Carolina 29422-2559

May 23, 1994

Mr. Michael Donnelly
Ecology and Environment, Inc.
Buffalo Corporate Center
368 Pleasantview Drive
Lancaster, NY 14086

Re: U.S. Naval Base Charleston Complex
FWS Log No. 4-6-94-274

Dear Mr. Donnelly:

We have reviewed the information received April 18, 1994 concerning the above referenced project. The following comments are provided in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and Section 7 of the Endangered Species Act, as amended (16 U.S.C. 1531-1543).

Please find listed below the federally listed endangered (E) and threatened (T) species which are known to occur in Charleston County, South Carolina to aid you in determining the impacts your project may have on protected species. The list also includes candidate species under review by the Service. Candidate species (C2) are not legally protected under the Endangered Species Act, and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as endangered/threatened. We are including these species in our response for the purpose of giving you advance notification. These species may be listed in the future, at which time they will be protected under the Endangered Species Act. In the meantime, we would appreciate anything you might do to avoid impacting them.

Habitat requirements for the below listed species should be compared to available habitat types at the project site. Field surveys for the species should be performed if habitat requirements overlap with that available at the project site. Please note that surveys for protected plant species must be conducted by a qualified biologist during the flowering or fruiting period(s) of the species. Results of these surveys should be forwarded to this office for review and comment.

West Indian manatee (Trichechus manatus) - E
 Arctic peregrine falcon (Falco peregrinus tundrius) - T
 Bald eagle (Haliaeetus leucocephalus) - E
 Bachman's warbler (Vermivora bachmanii) - E
 Wood stork (Mycteria americana) - E
 Red-cockaded woodpecker (Picoides borealis) - E
 Piping plover (Charadrius melodus) - T
 Kemp's ridley sea turtle (Lepidochelys kempii) - E
 Leatherback sea turtle (Dermochelys coriacea) - E
 Loggerhead sea turtle (Caretta caretta) - T
 Green sea turtle (Chelonia mydas) - T
 Shortnose sturgeon (Acipenser brevirostrum) - E*
 Sea-beach amaranth (Amaranthus pumilus) - T
 Canby's dropwort (Oxypolis canbyi) - E
 Pondberry (Lindera melissifolia) - E
 Chaff-seed (Schwalbea americana) - E
 Southeastern myotis (Myotis austroriparius) - C2
 Rafinesque's big-eared bat (Plecotus rafinesquii) - C2
 Bachman's sparrow (Aimophila aestivalis) - C2
 Black rail (Laterallus jamaicensis) - C2
 Loggerhead shrike (Lanius ludovicianus) - C2
 Island glass lizard (Ophisaurus compressus) - C2
 Gopher frog (Rana areolata capito) - C2
 Flatwoods salamander (Ambystoma cingulatum) - C2
 Incised groovebur (Agrimonia incisa) - C2
 Wagner's spleenwort (Asplenium heteroresiliens) - C2
 Georgia aster (Aster georgianus) - C2
 Venus' fly-trap (Dionaea muscipula) - C2
 Sarvis holly (Ilex amelanchier) - C2
 Pondspice (Litsea aestivalis) - C2
 Boykin's lobelia (Lobelia boykinii) - C2
 Eulophia (Pteroglossaspis ecristata) - C2

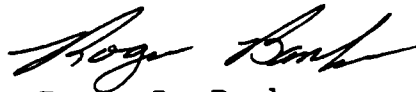
We also recommend you contact Ms. Katherine Boyle, Data Manager, SCWMRD Heritage Trust Section, Columbia, SC 29202, (803) 734-4032 concerning known populations of federal and/or state endangered or threatened species, and other sensitive species in the project area.

In accordance with the provisions of the Fish and Wildlife Coordination Act, the Service also has reviewed the subject project with regard to the effects the proposed action may have on wetlands and related fish and wildlife resources. Review of aerial photography revealed that wetland resources may be present on the site. Executive Order 11990, Protection of Wetlands states that "each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands." Therefore, until it can be shown that the Wetlands Executive Order is complied with, we recommend that no Federal funds or lands be used for this project. In addition, an onsite wetland determination should be completed and all necessary state and/or federal permits should be obtained. The U.S. Army

Corps of Engineers should be contacted to assist you in identifying any wetland areas and inform you of any necessary permits. We recommend that project plans be developed to avoid impacting wetland areas and reserve the right to review any required federal or state permits at the time of public notice issuance.

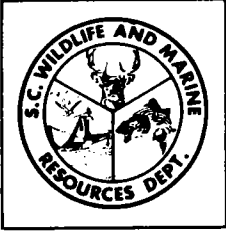
Your interest in ensuring the protection of endangered and threatened species and our nation's valuable wetland resources is appreciated. If you have any questions please contact Ms. Lori Duncan of my staff at (803) 727-4707. In future correspondence concerning the project, please reference FWS Log No. 4-6-94-274.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Roger L. Banks".

Roger L. Banks
Field Supervisor

RLB/LWD/km



*South Carolina
Wildlife & Marine
Resources Department*

James A. Timmerman, Jr., Ph.D.
Executive Director
W. Brock Conrad, Jr.
Director of
Wildlife and Freshwater Fisheries

April 21, 1994

Mr. Michael Donnelly
Ecology & Environment, Inc.
Buffalo Corporate Center
368 Pleasantview Drive
Lancaster, NY 14086

Re: Endangered species review for Charleston Naval Base

Dear Mr. Donnelly:

I have reviewed our data on the vicinity of the Charleston Naval Base, as outlined in your letter of April 13. Several rare or endangered species or communities have been reported in the area. Please see the enclosed printout and map for exact locations. The numbers in red on the maps correspond to the numbers in the DOT field on the printouts.

I have enclosed a list of species tracked by our agency in Berkeley and Charleston Counts, as an indication of other potential occurrences on the site.

Please keep in mind that this information is derived from our existing database, and we do not assume that it is complete. Areas not yet inventoried by our biologists may contain significant species or communities. Also, our data are always in need of updating because as natural populations change over time, species must be added, dropped, or reclassified.

Thank you for your interest in our program. If I can be of further assistance, please call me at 803-734-4032.

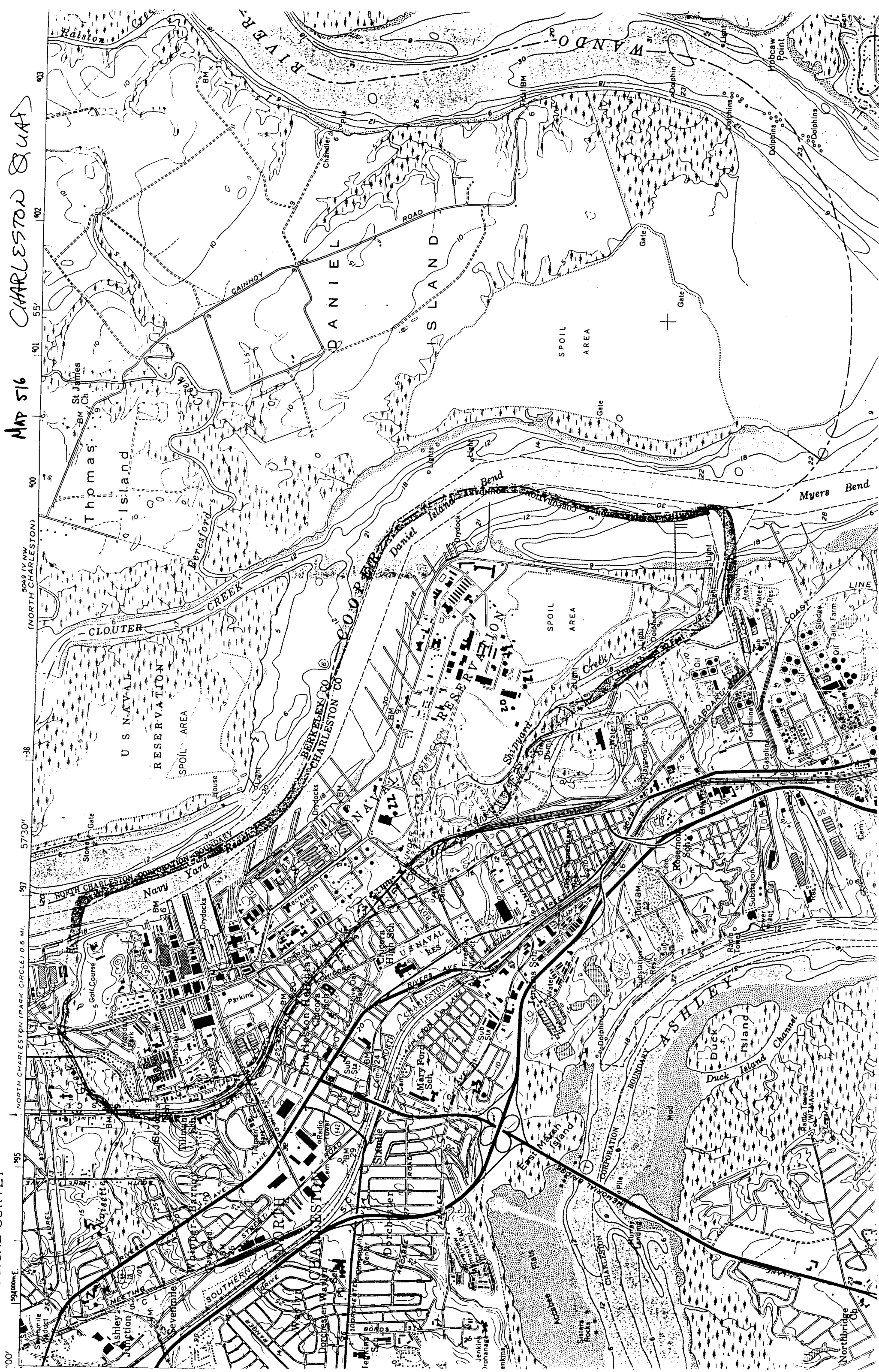
Sincerely,

Katherine Boyle
S.C. Heritage Trust

USGS QUAD: CHARLESTON

NAME.....	DOT..	SOURCE OF INFO.....	DATE....	LAT... LONG...	DESCRIPTION.....
AMBYSTOMA TIGRINUM TIGRINUM	2	C. ROBINSON CHARLESTON MUSEUM	33-02-01	325212 0795942	EASTERN TIGER SALAMANDER. REPORTED ON ROAD, 12 MILES WEST OF CHARLESTON ON MEETING ST. ONE SPECIMEN TAKEN. LOCATION UNCLEAR.
MUSTELA FRENATA	5	A. WIGGINS CHARLESTON MUSEUM	25-02-01	325212 0795920	REPORTED 8 MILES NORTH OF CHARLESTON.
STERNA ANTILLARUM	19	T. MURPHY #T-116	92-09-01	325042 0795645	NAVAL SHIPYARD, ENLISTED CLUB. COLONY CONSISTS OF LEAST TERNS (ROOFTOP). INACTIVE SINCE 1991.
COLONIAL WATERBIRD	20	T. MURPHY #T-062	92-09-01	325036 0795648	DRUM ISLAND V, NAVAL SHIPYARD II. COLONY CONSISTS OF GREAT EGRETS, LITTLE BLUE HERONS, SNOWY EGRETS, TRI-COLOR HERONS, BLACK CROWN NIGHT HERONS, AND CATTLE EGRETS. ACTIVE 1992.
COLONIAL WATERBIRD	21	T. MURPHY #T-053	92-09-01	325036 0795645	DRUM ISLAND IV, NAVAL SHIPYARD. COLONY CONSISTS OF SNOWY EGRETS, TRI-COLOR HERONS, BLACK CROWN NIGHT HERONS, GLOSSY IBIS, CATTLE EGRETS, AND WHITE IBIS. INACTIVE SINCE 1989.
STERNA ANTILLARUM	22	T. MURPHY #T-115	92-09-01	325106 0795724	NAVAL SHIPYARD, WAREHOUSE 224. COLONY CONSISTS OF LEAST TERNS (ROOFTOP). ACTIVE 1992.
STERNA ANTILLARUM	23	T. MURPHY #T-130	92-09-01	325036 0795845	BAKER MEDICAL CENTER. COLONY CONSISTS OF LEAST TERNS (ROOFTOP). ACTIVE 1992.





RARE, THREATENED, AND ENDANGERED SPECIES OF BERKELEY COUNTY

STATUS.....GRANK.....SRANK.....SCIENTIFIC NAME.....COMMON NAME.....

ANIMALS:

FE	G3	S3S4	ACIPENSER BREVIROSTRUM	SHORTNOSE STURGEON
SE/C2	G2G3	S1	AMBYSTOMA CINGULATUM	FLATWOODS SALAMANDER
SC	G5T5	S2S3	AMBYSTOMA TIGRINUM TIGRINUM	EASTERN TIGER SALAMANDER
UN	G5	S5	CLEMMYS GUTTATA	SPOTTED TURTLE
SE/C2	G4	S2?	CORYNORHINUS RAFINESQUII	RAFINESQUE'S BIG-EARED BAT
SE	G5	S2	ELANOIDES FORFICATUS	AMERICAN SWALLOW-TAILED KITE
FE	G3	S2	HALIAEETUS LEUCOCEPHALUS	BALD EAGLE
UN	G5	S1?	LUCANIA GOODEI	BLUEFIN KILLIFISH
UN	G5	S3/S4	NEOTOMA FLORIDANA FLORIDANA	EASTERN WOODRAT
UN	G5	S2	NERODIA FLORIDANA	FLORIDA GREEN WATER SNAKE
FE	G2	S2	PICOIDES BOREALIS	RED-COCKADED WOODPECKER
SC/C2	G4	S1	RANA CAPITO	GOPHER FROG
UN	G5	S?	SEMINATRIX PYGAEA	BLACK SWAMP SNAKE
ST	G4	S3	STERNA ANTILLARUM	LEAST TERN

PLANTS:

NC/C2	G3	S1	AGRIMONIA INCISA	INCISED GROOVEBUR
UN	G3	S?	AMPHICARPUM MUHLENBERGIANUM	BLUE MAIDEN-CANE
NC/C2	G2	S1	ASPLENIUM HETERORESILIENS	WAGNER'S SPLEENWORT
SL	G5	S1S2	ASPLENIUM RESILIENS	BLACK-STEM SPLEENWORT
SL	G3G5Q	S1	BACOPA CYCLOPHYLLA	COASTAL-PLAIN WATER-HYSSOP
UN	G4G5	S?	BURMANNIA BIFLORA	NORTHERN BURMANNIA
NC/C2	G2G3	S1	CAREX CHAPMANII	CHAPMAN'S SEDGE
RC	G4	S1	CARYA MYRSINITICIFORMIS	NUTMEG HICKORY
UN	G?	S?	CASSANDRA CALYCLATA	
RC	G5	S2	CASTILLEJA COCCINEA	SCARLET INDIAN-PAINTBRUSH
UN	G3?	S?	CHASMANTHIUM NITIDUM	SHINY SPIKEGRASS
UN	G3G5	S?	COREOPSIS GLADIATA	SOUTHEASTERN TICKSEED
SL	G4?	S1	CYPERUS TETRAGONUS	PIEDMONT FLATSEDEGE
UN	G3G4	S?	EPIDENDRUM CONOPSEUM	GREEN-FLY ORCHID
UN	G?	S?	ERIOCAULON RAVENELII	RAVENEL'S PIPEWORT
UN	G4TUQ	S?	ERYNGIUM AQUATICUM VAR RAVENELII	MARSH ERYNGO
UN	G3G5	S?	HELENIUM PINNATIFIDUM	SOUTHEASTERN SNEEZEWEED
FE	G2	S1	LINDERA MELISSIFOLIA	PONDBERRY
UN	G4	S?	LISTERA AUSTRALIS	SOUTHERN TWAYBLADE
C2	G3G4	S3	LITSEA AESTIVALIS	PONDSPICE
UN	G5	S?	MELANTHIUM VIRGINICUM	VIRGINIA BUNCHFLOWER
UN	G5	S?	MENISPERMUM CANADENSE	CANADA MOONSEED
RC/C2	G2G3	S2	MYRIOPHYLLUM LAXUM	PIEDMONT WATER-MILFOIL
UN	G5	S?	OPHIOGLOSSUM PETIOLATUM	LONGSTEM ADDER'S-TONGUE FERN
FE	G2	S1	OXYPOLIS CANBYI	CANBY'S DROPWORT
UN	G3G4	S?	PELTANDRA SAGITTIFOLIA	SPOON-FLOWER
SL	G4G5	S?	PHYSOSTEGIA LEPTOPHYLLA	SLENDER-LEAVED DRAGON-HEAD
UN	G5	S?	PILEA FONTANA	SPRINGS CLEARWEED
C2	G2	S?	PLANTAGO SPARSIFLORA	PINELAND PLANTAIN
UN	G3G4	S2	PLATANThERA INTEGR	YELLOW FRINGELESS ORCHID
SL	G5	S1	PLATANThERA LACERA	GREEN-FRIDGE ORCHIS
UN	G4G5	S?	PONTHIEVA RACEMOSA	SHADOW-WITCH
UN	G5	S?	POTAMOGETON FOLIOSUS	LEAFY PONDWEED
C2	G3G4	S2	PTEROGLOSSASPIS ECRISTATA	CRESTED FRINGED ORCHID
C2	G3	S2	RHEXIA ARISTOSA	AWNEED MEADOWBEAUTY
UN	G4	S?	RHYNCHOSPORA TRACYI	TRACY BEAKRUSH
UN	G3	S1	SARRACENIA RUBRA	SWEET PITCHER-PLANT
FE	G2	S2	SCHWALBEA AMERICANA	CHAFFSEED
C2	G1G2	S?	THALICTRUM SUBROTUNDUM	RECLINED MEADOW-RUE
NC/C2	G3T1	S1	TRILLIUM PUSILLUM VAR PUSILLUM	LEAST TRILLIUM
SL	G4	S2	TRIPHORA TRIANTHOPHORA	NODDING POGONIA
UN	G4G5	S?	XYRIS BREVIFOLIA	SHORT-LEAVED YELLOW-EYED GRASS

KEY

GRANK/SRANK - the Nature Conservancy rating of degree of endangerment:

- G1 - Critically imperiled globally because of extreme rarity or because of some factor(s) making it especially vulnerable to extinction
- G2 - Imperiled globally because of rarity or factor(s) making it vulnerable
- G3 - Either very rare throughout its range or found locally in a restricted range, or having factors making it vulnerable
- G4 - Apparently secure globally, though it may be rare in parts of its range
- G5 - Demonstrably secure globally, though it may be rare in parts of its range
- GH - Of historical occurrence throughout its range, with possibility of rediscovery
- GX - Extinct throughout its range
- G? - Status unknown

- S1 - Critically imperiled state-wide because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation
- S2 - Imperiled state-wide because of rarity or factor(s) making it vulnerable
- S3 - Rare or uncommon in state
- S4 - Apparently secure in state
- S5 - Demonstrably secure in state
- SA - Accidental in state (usually birds or butterflies that are far outside normal range)
- SE - Exotic established in state
- SH - Of historical occurrence in state, with possibility of rediscovery
- SN - Regularly occurring in state, but in a migratory, non-breeding form
- SR - Reported in state, but without good documentation
- SX - Extirpated from state
- S? - Status unknown

STATUS - legal status:

- FE - Federal Endangered
- FT - Federal Threatened
- NC - Of Concern, National (unofficial - plants only)
- RC - Of Concern, Regional (unofficial - plants only)
- SE - State Endangered (official state list - animals only)
- ST - State Threatened (official state list - animals only)
- SC - Of Concern, State (unofficial - animals)
- SL - Of Concern, State (unofficial - plants)
- SX - State Extirpated
- PE/PT/C1/C2 - Proposed or candidate for federal listing
- UN - Undetermined

RARE, THREATENED, AND ENDANGERED SPECIES OF CHARLESTON COUNTY

STATUS.....GRANK.....SRANK.....SCIENTIFIC NAME.....COMMON NAME.....

ANIMALS:

FE	G3	S3S4	ACIPENSER BREVIROSTRUM	SHORTNOSE STURGEON
UN	G5T5	S5	ACRIS CREPITANS CREPITANS	NORTHERN CRICKET FROG
C2	G3	S3S4	AIMOPHILA AESTIVALIS	BACHMAN'S SPARROW
SE/C2	G2G3	S1	AMBYSTOMA CINGULATUM	FLATWOODS SALAMANDER
SC	G5T5	S2S3	AMBYSTOMA TIGRINUM TIGRINUM	EASTERN TIGER SALAMANDER
FT	G3	S3	CARETTA CARETTA	LOGGERHEAD TURTLE
ST	G5	S3?	CHARADRIUS WILSONIA	WILSON'S PLOVER
UN	G5	S5	CLEMMYS GUTTATA	SPOTTED TURTLE
SE/C2	G4	S2?	CORYNORHINUS RAFINESQUII	RAFINESQUE'S BIG-EARED BAT
UN	G5	S4	DENDROICA VIRENS	BLACK-THROATED GREEN WARBLER
SE	G5	S2	ELANOIDES FORFICATUS	AMERICAN SWALLOW-TAILED KITE
FE	G3	S2	HALIAEETUS LEUCOCEPHALUS	BALD EAGLE
UN	G5	S4	ICTINIA MISSISSIPPIENSIS	MISSISSIPPI KITE
UN	G5	S?	LASIURUS CINEREUS	HOARY BAT
UN	G4	S4	LIMNOTHLYPIS SWAINSONII	SWAINSON'S WARBLER
SC	G5	S4	MICROTUS PENNSYLVANICUS	MEADOW VOLE
UN	G5	S2	MICRURUS FULVIUS	EASTERN CORAL SNAKE
UN	G5	S3S4	MUSTELA FRENATA	LONG-TAILED WEASEL
FE	G4	S1S2	MYCTERIA AMERICANA	WOOD STORK
C2	G4	S2S3	MYOTIS AUSTRORIPARIUS	SOUTHEASTERN MYOTIS
UN	G5	S3S4	NEOTOMA FLORIDANA	EASTERN WOODRAT
UN	G5	S3/S4	NEOTOMA FLORIDANA FLORIDANA	EASTERN WOODRAT
C2	G4	S1S2	OPHISAURUS COMPRESSUS	ISLAND GLASS LIZARD
SC	G4	S1S2	PELECANUS OCCIDENTALIS	BROWN PELICAN
UN	G5	SA	PHOCA VITULINA	HARBOR SEAL
FE	G2	S2	PICOIDES BOREALIS	RED-COCKADED WOODPECKER
ST	G5	S2	PSEUDOBANCHUS STRIATUS	DWARF SIREN
SC/C2	G4	S1	RANA CAPITO	GOPHER FROG
UN	G5	S4	SCIURUS NIGER	EASTERN FOX SQUIRREL
ST	G4	S3	STERNA ANTILLARUM	LEAST TERN
UN	G5	S4	TYTO ALBA	BARN-OWL
SC	G5	S3?	URSUS AMERICANUS	BLACK BEAR
FE	G1	SX	VERMIVORA BACHMANII	BACHMAN'S WARBLER

PLANTS:

NC/C2	G3	S1	AGRIMONIA INCISA	INCISED GROOVEBUR
FT	G2	S1	AMARANTHUS PUMILUS	SEABEACH PIGWEED
UN	G5	S?	ANTHAENANTIA RUFA	PURPLE SILKSCALE
RC	G3G4	S1	ASCLEPIAS PEDICELLATA	SAVANNAH MILKWEED
UN	G4?	S?	BOTRYCHUM LUNARIOIDES	WINTER GRAPE-FERN
UN	G5?	S?	CALOPOGON BARBATUS	BEARDED GRASS-PINK
UN	G5?	S4	CANNA FLACCIDA	BANDANA-OF-THE-EVERGLADES
UN	G3G4	S?	CAREX DECOMPOSITA	EPIPHYTIC SEDGE
UN	G3?	S?	CHASMANTHIUM NITIDUM	SHINY SPIKEGRASS
UN	G3G5	S?	COREOPSIS GLADIATA	SOUTHEASTERN TICKSEED
SL	G4?	S1	CYPERUS TETRAGONUS	PIEDMONT FLATSEDGE
RC/C2	G3	S1	DIONAEA MUSCIPULA	VENUS' FLY-TRAP
UN	G4G5	S?	DYSCHORISTE HUMISTRATA	SWAMP DYSCHORISTE
UN	G5	S?	ELEOCHARIS VIVIPARA	VIVIPAROUS SPIKE-RUSH
UN	G4G5	S?	HABENARIA QUINQUESETA	LONG-HORN ORCHID
UN	G3G5	S?	HELENIUM PINNATIFIDUM	SOUTHEASTERN SNEEZEWEED
UN	G5?	S?	IPOMOEA STOLONIFERA	BEACH MORNING-GLORY
UN	G5?	S?	LEPUROPETALON SPATHULATUM	SOUTHERN LEPUROPETALON
UN	G4	S?	LISTERA AUSTRALIS	SOUTHERN TWAYBLADE
C2	G3G4	S3	LITSEA AESTIVALIS	PONDSPICE
C2	G2	S?	LOBELIA BOYKINII	BOYKIN'S LOBELIA
SL	G4	S1S2	LYGODIUM PALMATUM	CLIMBING FERN
RC	G3	S1	MONOTROPSIS ODORATA	SWEET PINESAP

UN	G5	S?	OROBANCHE UNIFLORA	NAKED BROOMRAPE
UN	G3G4	S?	PELTANDRA SAGITTIFOLIA	SPOON-FLOWER
SL	G3?	S?	PIERIS PHYLLYREIFOLIA	CLIMBING FETTER-BUSH
UN	G3G4	S2	PLATANThERA INTEGRa	YELLOW FRINGELESS ORCHID
SL	G5	S1S2	PSILOtUM NUDUM	WHISK FERN
C2	G3G4	S2	PTEROGLOSSASPIS ECRISTATA	CRESTED FRINGED ORCHID
UN	G3G4	S?	RHYNCHOSPORA INUNDATA	DROWNED HORNEDRUSH
UN	G4	S2	SAGERETIA MINUTIFLORA	TINY-LEAVED BUCKTHORN
UN	G3	S1	SARRACENIA RUBRA	SWEET PITCHER-PLANT
SX	G4	SX	SCHISANDRA GLABRA	BAY STARVINE
FE	G2	S2	SCHWALBEA AMERICANA	CHAFFSEED
SL	G3G4	S1S2	SCLERIA BALDWINII	BALDWIN NUTRUSH
UN	G4G5	S1	SPIRANTHES LACINIATA	LACE-LIP LADIES'-TRESSES
UN	G5	SH	SYNGONANTHUS FLAVIDULUS	YELLOW PIPEWORT
UN	G3G5	S?	THALIA DEALBATA	POWDERY THALIA
SL	G4	S2	TRIPHORA TRIANTHOPHORA	NODDING POGONIA



COMMANDER, NAVAL BASE
CHARLESTON, SOUTH CAROLINA 29408-5100

August 18, 1995

Mrs. Mary Watson Edmonds
Deputy State Historic Preservation Officer
South Carolina Department of Archives and History
1430 Senate Street, Post Office Box 11669
Columbia, South Carolina 29211

Dear Mrs. Edmonds,

Thank you for your letter dated May 23, 1994, containing the State Historic Preservation Officer's (SHPO) comments on the Intensive Survey of historic properties entitled *Inventory, Evaluation, and Nomination of Military Installations; Naval Base Charleston Volumes 1 and 2*) and the comments generated by your staff's visit to Charleston on April 28-29, 1994.

In the interest of moving forward with a Memorandum of Agreement, I concur in your identification of potentially eligible facilities and the revised historic district boundaries proposed by your staff with the exception of six (6) buildings, five (5) of which were not addressed in the Goodwin survey. A search of our property records indicates that Building 1374 (Cooling Tower for Building 46) was constructed in 1968, Buildings 1413 and 1414 (residential garages) were constructed in 1976, Building 1418 (also a residential garage) was constructed in 1950, and Building 220 (Golf Course Pro Shop) was constructed in 1968. On the basis of their age, it is our determination that these properties do not meet the eligibility criteria set forth in 36 CFR Part 800, and therefore should be excluded from the list of National Register-eligible properties. These properties have been discussed with Mr. Ian Hill and Mr. Andrew Chandler of your staff, and they have indicated their agreement with our determination.

A sixth building, Building NH1137, was constructed in 1942 as a temporary structure and housed Hospital Corps WAVES assigned to the Charleston Naval Hospital. This building is a one-story variation of the B-1 H-Type Navy Barracks, which was addressed on pages 47-48 of the U.S. Army Corps of Engineers Construction Engineering Research Laboratory (CERL) document *World War II Temporary Military Buildings (March 1993)*; that document was prepared in accordance with the Programmatic Agreement (PA) of 1986 between the Department of Defense and the National Conference of State Historic Preservation Officers. It is our position that Building NH1137 has been properly researched and documented in the CERL document. As a temporary structure addressed by the PA, it is not eligible for inclusion in the National Register of Historic Places.

Responding to your requests, we are in the process of obtaining full-size photos depicted on the Xerox copy of the contact sheet contained in the Goodwin survey. Upon receipt, these will be forwarded to your office for your file and retention. We are also in the process of contracting with Miles Glick and Associates of Charleston for the development of a Conditions Assessment and Annual Maintenance Plan and Budget for the potentially historic properties at Naval Base Charleston. That report will provide the Navy with a better understanding of the current conditions and requirements for maintenance of designated properties and will permit realistic, intelligent negotiations between the Navy and your office on a Memorandum of Agreement.

In addition, we are researching all the original drawings and records on file for the eligible properties listed in your letter in an effort to determine the original architects and engineers, as well as their addresses. As soon as this research is completed, we will provide that information to Goodwin and Associates for their inclusion in their final report, and will certainly forward a copy of that correspondence to you.

Rapid turnover of the Naval Base to the community remains a primary and high priority concern to the Navy as well as Governor Campbell's Reuse Authority. We look forward to meeting with members of your staff, as well as the representative of the Advisory Council on Historic Preservation here on September 27-29 for drafting of a Memorandum of Agreement which will address maintenance, disposal, and reuse of the properties. A public meeting of interested parties is scheduled on the evening of September 28, 1994.

Thank you for your diligent efforts and the hard work expended by your staff in the consultation process. We are grateful for your assistance and counsel.

Sincerely,

A handwritten signature in black ink, appearing to read "T. J. Robertson", with a stylized flourish at the end.

T. J. ROBERTSON
Rear Admiral, U. S. Navy
Commander, Naval Base, Charleston

G

**Inventory of National Register Districts
and Structures**

<p align="center">Table G-1</p> <p align="center">CHARLESTON NAVAL SHIPYARD HISTORIC DISTRICT</p> <p align="center">NAVAL BASE CHARLESTON</p> <p align="center">CHARLESTON COUNTY, SOUTH CAROLINA</p>			
Facility Number	Date of Construction	Original/Current Use	Contributing/ Non-Contributing
2	1906	Ship Fitter Shop/Ship Fitter Shop and Sail Loft	C
2A	1937	Ship Fitter Shop	C
3	1905	Inside Machine Shop	C
4	1918	General Storehouse/Admin.	C
5	1904	Woodworking Shop	C
6	1906	Forge Shop	C
7	1908	Administration Building	C
8	1906	Administration Building	C
9	1906	Foundry/Foundry Boiler Shop	C
10	1918	Pattern and Electric Shop/Electronic Div. Pattern Shop	C
13	1906	Clothing Factory/Quality Assurance Facility	C
32	1909	Central Power Plant	C
35	1913	Welding School/General Warehouse and Supply	C
43	1941	Electric Shop/Shop	C
44	1941	Sheet Metal Shop/Miscellaneous Storage	C
46	1941	Salt Water Pump House/MIS UTL PLT BLDG	C
56	1937	Pipe and Copper Shops	C
57	1940	Riggers Shop/Shop	C
58A	1942	Sub-Dispensary/Admin.	C
59	1940	Shopfitters' Layout Area/Shop	C
62	1942	Storage and Latrine/WTRFR SV SPT BL BLDG	C
63	1942	Yard Cafeteria/Restaurant	C
64	1942	Storehouse/Warehouse	C
74	1942	Field Offices and Tool Room/Misc. Strg Rdy 1 Bldg	C
77	1942	Latrine/Substation and Restroom	NC
80	1943	Shopfitters Utility Shop/Marine Machine Shop	C
84	1942	Substation/Substation	C
95	1943	Substation and Storage	C
96	1943	Substation and Storage	NC
99	1943	Salt Water Pump House/SHD Fire Building	NC

Table G-1

**CHARLESTON NAVAL SHIPYARD HISTORIC DISTRICT
NAVAL BASE CHARLESTON
CHARLESTON COUNTY, SOUTH CAROLINA**

Facility Number	Date of Construction	Original/Current Use	Contributing/ Non-Contributing
147	1949	Cntrl Tool Shop Bldg	NC
221	1970	Pipefitting Shop Bldg	NC
222	1971	Nuc Repair Shop Bldg	NC
226	1976	In/Mach Shop Bldg	NC
250	Unknown	Waterfront Service Support	NC
301	1907	Dry Dock/Dry Dock	C
301B	Pre 1947	Pumpwell	NC
302	1942	Dry Dock/Dry Dock	C
302B	1941	Pumphouse/Pumphouse	C
303	1943	Dry Dock	C
303B	1943	Pumpwell	C
314	1942	Pier/Repair Pier	C
317A	1942	Pier	C
317B	1943	Pier	C
317C	1916	Pier/Wharf	C
317D	1943	Pier	C
317E	1942	Pier	C
333	1942	Bulkhead/Bulkhead and Repair Pier	C
342	1932?	Shipways/Ship Bldg Ways	C
351	1936	Quay Wall	C
352	1942	Pier	C
354	1943	Bulkhead/Dry Dock	C
356	1943	Bulkhead/Dry Dock	C
414	1966	Fire Pro Pump Station	NC
445A	Unknown	Gas Bottle Storage	NC
445D	Unknown	Gas Bottle Storage	NC
457	1969	Admin. Off Bldg	NC
458	1965	Elec Distr Bldg	NC
459	Unknown	Switching Substation	NC
460	1974	SW/SUB Bldg	NC

Table G-1

**CHARLESTON NAVAL SHIPYARD HISTORIC DISTRICT
NAVAL BASE CHARLESTON
CHARLESTON COUNTY, SOUTH CAROLINA**

Facility Number	Date of Construction	Original/Current Use	Contributing/ Non-Contributing
1119	1942	Boiler House/Admin.	C
1127	1934	Steel Storage Shed/General Warehouse	C
1138	1940	Storehouse/Warehouse	C
1190	1943	Compressor House	C
1292	1942	Time Clock Station/Admin. Strg Rdy Bldg	NC
1298	1944	Galvanizing Plant/Service Shop	C
1299	1942	Shop/Shop	C
1314	1940	Foundry Building/Foundry Building	NC
1374	Unknown	Storage	C
1655	Modern	Unknown	NC
1712	1968	Misc Strg Rdy Bldg	NC
1717	Unknown	Storage	NC
1745	1970	Admin Strg Rdy Bldg	NC
1775	Modern	Sentry House	NC
1783	1972	Sewage Pump Station	NC
1801	1974	Misc Strg Rdy	NC
1826	Unknown	Time Clock Station	NC
1827	Unknown	Time Clock Station	NC
1828	Unknown	Time Clock Station	NC
NSC 45	1941	General Stores/Warehouse	C
NSC 66	1942	Storehouse/Warehouse	C
NSC 67	1943	Storehouse/Warehouse	C

Table G-2 NAVAL HOSPITAL HISTORIC DISTRICT NAVAL BASE CHARLESTON CHARLESTON COUNTY, SOUTH CAROLINA			
Facility Number	Date of Construction	Original/Current Use	Contributing/ Non-Contributing
CC-BB	1942	Officer's Quarters	C
EE-DD	1942	Officer's Quarters	C
GG-FF	1942	Officer's Quarters	C
II-HH	1942	Officer's Quarters	C
KK-JJ	1942	Officer's Quarters	C
LL-AA	1942	Officer's Quarters	C
M-1A	1942	Garage	C
M-2A	1942	Garage	C
M-3A	1942	Garage	C
M-5	1942	NCO Quarters	C
M6-M7	1942	Officer's Quarters	C
M8-M9	1942	Officer's Quarters	C
NH 45	1941	Hospital/Admin	C
NH 46	1941	Hospital/Admin	C
NH 47	1941	Hospital/Admin	C
NH 48	1941	Hospital/Admin	C
NH 49	1941	Hospital/Maintenance Shop	C
NH 50	1941	Hospital/Admin	C
NH 51	1941	Hospital/Admin	C
NH 52	1941	Hospital/Admin	C
NH 53	1941	Hospital/Admin	C
NH 54	1941	Hospital/Admin	C
NH 55	1941	Single Officers Quarters/Admin	C
NH 61	1941	Nurses Quarters/Admin	C
NH 62	1945	Recreation Building/Recreation Building	NC
NH 68	1943	Medical Storage/Medical Storage	C
72	post 1945	Storage	NC
78	1942	Water Tower/Water Tower	C

Table G-2 NAVAL HOSPITAL HISTORIC DISTRICT NAVAL BASE CHARLESTON CHARLESTON COUNTY, SOUTH CAROLINA			
Facility Number	Date of Construction	Original/Current Use	Contributing/ Non-Contributing
520B	1944	Flag Pole/Flag Pole	C
758	1942	Dwelling/Dwelling	C
759	1942	Dwelling/Dwelling	C
760	1917	Dwelling/Dwelling	C
761	1917	Dwelling/Dwelling	C
762	1919	Dwelling/Dwelling	C
763	1919	Dwelling/Dwelling	C
1413	post 1945	Storage	C
1414	post 1945	Storage	C
1418	post 1945	Storage	C

Table G-3 OFFICER HOUSING HISTORIC DISTRICT NAVAL BASE CHARLESTON CHARLESTON COUNTY, SOUTH CAROLINA			
Facility Number	Date of Construction	Original/Current Use	Contributing/ Non-Contributing
A	1905	Navy Yard Commandant/Naval Base Commandant Quarters	C
B	1942	Officer Quarters	C
C	1908	Officer Quarters	C
D	1942	Officer Quarters	C
F	1898	Caretaker's House/Officer Quarters	C
G	1903	Officer Quarters	C
H-I	1905	Officer Quarters	C
J	1917	Officer Quarters	C
K	1938	Officer Quarters	C
L	1938	Officer Quarters	C
M	1938	Officer Quarters	C
N	1937	Officer Quarters	C
O	1938	Officer Quarters	C
P	1938	Officer Quarters	C
Q	1938	Officer Quarters	C
R	1938	Officer Quarters	C
S	1941	Officer Quarters	C
T	1941	Officer Quarters	C
W-X	1943	Officer Quarters	C
Y-Z	1943	Officer Quarters	C
220	Unknown	Duplex Quarters	C
700	1963	Officer Quarters	NC
701	1965	Officer Quarters	NC
705	1965	Officer Quarters	NC
706	1965	Officer Quarters	NC
708	1966	Officer Quarters	NC
712	1963	Officer Quarters	NC
717	1965	Officer Quarters	NC

Table G-3 OFFICER HOUSING HISTORIC DISTRICT NAVAL BASE CHARLESTON CHARLESTON COUNTY, SOUTH CAROLINA			
Facility Number	Date of Construction	Original/Current Use	Contributing/ Non-Contributing
718	1965	Officer Quarters	NC
719	1965	Officer Quarters	NC
1101	ca. 1922	Garage	NC
1284	ca. 1922	Garage	C
1285	ca. 1922	Garage	C
1287	ca. 1922	Garage	C
1411		Tennis Court	NC
None	ca. 18th C	"Dead House"	C

Table G-4		
NATIONAL REGISTER STRUCTURES OUTSIDE DISTRICTS		
Facility Number	Date of Construction	Original/Current Use
590-A	Pre 1947	Coast Guard Air Station Bachelor Officer's Quarters
1179	Pre 1947	Chapel
M-17	Unknown	Marine Corp Barracks

H

DEIS Written Comments and Responses



DEPARTMENT OF THE ARMY
CHARLESTON DISTRICT, CORPS OF ENGINEERS

P.O. BOX 919
CHARLESTON, S.C. 29402-0919

REPLY TO
ATTENTION OF

January 17, 1995

Regulatory Branch

Mr. William Sloger
Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, S.C. 29419-9010

Dear Mr. Sloger:

This is in response to the Draft Environmental Impact Statement (DEIS) for the disposal and reuse of the Charleston Naval Base, North Charleston, South Carolina. You have requested that the Army Corps of Engineers (ACE) review and provide comments on this document.

The comments documented in this letter were generally given in verbal form by representatives of the ACE during a meeting held at the office of South Carolina Department of Health & Environmental Control's Office of Ocean and Coastal Resource Management (SCDHEC OCRM) on November 28, 1994. The sign-in record for that meeting includes the names of yourself, Laurens Pitts, Tony Hunt, Thuan B. Fielding, and Pat Franklin all of Navy Southern Division; Ned Johnson of the Navy Yard; Captain Jim Augustin and Bobby Dearhart both of the Navy Base Closure Office; Ray Anderson of the Redevelopment Authority; Bernard Groseclose of the State Ports Authority; Dan Castle of Ecology & Environment Inc.; Rob Mikell, Heyward Robinson, Steve Snyder, and Steve Moore all of OCRM; Ann Ragan, Joe Bowers, Rick Richter, and Wayne Fanning all of SCDHEC; Jane Settle of SCDNR; Diane Duncan of USFWS; Doyle T. Brittain of EPA; David Rackley of NMFS; Tina Hadden, Steven J. Coker, Braxton Kyzer, and Clarence Ham all of the Army Corps of Engineers.

During the November 28th meeting, representatives of the ACE stated that the DEIS was generally inadequate for the purpose of evaluating the alternative redevelopment scenarios pursuant to ACE permit responsibilities given in the Clean Water Act and the Rivers and Harbors Act. Your representatives responded by stating that the DEIS was considered a conceptual plan for purposes of the redevelopment alternatives presented in the DEIS. They further stated that it would be the responsibility of the redevelopment authority to fund any subsequent or supplemental documentation that may be required for compliance with the National Environmental Policy Act (NEPA), or the Clean Water Act's 404(b)(1) guidelines, or other ACE permitting regulations. Based on this understanding, the comments given herein regarding the redevelopment alternatives are provided to document for record the general type and level of detail and analysis that may be required in such future documentation. These comments are not exhaustive and additional informational requirements may be discovered during processing of future permit applications for the redevelopment. For ease of reference, I have itemized my comments below.

1. Wetland Delineation. The wetlands that have been identified within the base boundaries which are depicted in Figures 3-6 and 3-7. On page 3-33, the document identified that approximately 32.5 acres of Palustrine Forested (PFO) wetlands exist on the base. However, after planimetrying the PFO wetland boundaries depicted in Figures 3-6 & 3-7, the combined total was approximately 20.5 acres rather than 32.5 acres. Also, another inconsistency in the wetland acreage was found on page 4-24 under Section 4.3.1 Preferred Development Plan. In regards to wetland impacts, it was stated that approximately 77.5 acres of wetlands, primarily freshwater scrub-shrub and wooded wetlands would potentially be impacted by the preferred development plan. However, after planimetrying those areas as well as all the other types of palustrine wetland areas depicted in Figures 3-6 & 3-7, the total was only approximately 42 acres. Even though it is understood these wetland boundaries are approximations, the wetland acreage addressed in the text and what is depicted on the wetland maps should be consistent.

One factor contributing to inaccurate wetland acreage figures is that several of these wetland areas, most particularly the freshwater systems, were not accurately depicted on Figures 3-6 & 3-7. The Corps realizes these wetland boundaries are approximations. However, based on an on-site visit by Corps biologists, it was determined that several of these areas would not be classified as wetlands according to the Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1). In addition, there were several freshwater wetland systems found at the southern end of the base that were not depicted on the wetland maps. However, in total, the wetland acreage are actually somewhat lower than addressed in the draft EIS. If you desire, my staff stands ready to assist your agency in this endeavor so that a more accurate wetland approximation can be incorporated into the final EIS. However, until more certain development plans for the property are prepared, a wetland approximation will suffice.

In regards to wetland classification, it was noted by Corps biologists during an on site inspection that there were errors in the classification of many wetland systems. The following are the areas that were incorrectly classified according to the Cowardin System of wetland classification:

a. The two tidal wetland systems located adjacent to the Cooper River and Shipyard Creek at the southern end of the base should be classified with a water regime modifier of "N" (regularly flooded) rather than "P" (irregularly flooded).

b. The wetland system classified as PEM1FH (Palustrine Emergent Persistent Semi-Permanently Flooded (Diked) should be classified as E2EM1N (Estuarine Intertidal Emergent-Regularly Flooded)

c. The wetland system classified as PEM1R (Palustrine Emergent Persistent-Seasonal Tidal) should be classified as E2EM1P (Estuarine Intertidal Emergent-Irregularly Flooded).

d. The wetland system located adjacent to building 661 classified as PFO (Palustrine Forested) should be separated into two wetland classifications.

ACE 1 - Sections 3.3 and 4.3 of this FEIS have been updated to incorporate additional information and clarification regarding wetland resources (including acreages and classifications) on the Base.

This area is predominantly a E2EMIN (Estuarine Intertidal Emergent-Regularly Flooded) wetland. This wetland system merges into a PFOIC (Palustrine Forested Broad Leaved Deciduous Seasonally Flooded) Wetland at its upper reaches. An on site ground truthing will be required to determine the boundary between these two systems.

e. The wetland area classified as E2SS1P (Estuarine Intertidal Scrub Shrub-Irregularly Flooded) should be broken down into two wetland classifications. The large majority of this area should be classified as E2EM1P (Estuarine Intertidal Emergent-Irregularly Flooded) with a smaller portion classified as E2EMIN (Estuarine Intertidal Emergent-Regularly Flooded). On site ground truthing will be required to determine the boundary between these two systems. It should also be noted that it appears this particular area, as well as the adjacent PFOIR wetland, were inadvertently depicted as urban areas on Figure 3-4 (Vegetative Cover At Charleston Naval Base). Figure 3-4 should be changed to reflect those areas as wetlands.

f. The remaining areas classified as PFO should be classified to subclass and water regime which would be PFOIC (Palustrine Forested Broad Leaved Deciduous Seasonally Flooded).

Since a purpose of the draft EIS document is to assist in proper planning by the redevelopment authority through the information contained in this document, it is essential that the discrepancies addressed above are corrected and reflected in the final document. Doing so will provide accurate baseline information for environmental planning with respect to Section 404 of the Clean Water Act as well as The Rivers and Harbors Act. The incorrect information in the current DEIS could cause problems and potential delays in the redevelopment phase of the base during the permitting phase.

2. Actions, Purpose, and Need. The DEIS states that one of its purposes is to assist the decision makers in implementing a redevelopment plan. As stated near the beginning of this letter, the ACE finds the DEIS to be generally inadequate for purposes of selecting or implementing a redevelopment plan. Therefore, it is suggested that the document be revised to clearly inform the decision makers that additional information in the form of an EIS or supplemental EIS may be required.

Article 1.2 states that the proposed action addressed in the draft EIS includes the following parts.

- a. The disposal of excess Naval property.
- b. Subsequent reuse and redevelopment of the disposed Naval property.

Article 1.3, of the draft EIS presents an explanation of both the purpose and need for the proposed actions. The stated purposes given are the following.

- a. To comply with BRAC and certain federal laws and rules.
- b. To provide information to the Secretary of the Navy.
- c. To guide the development of the lands.

ACE 2 - It should be clarified that by law, the Pryor Amendment as implemented by the National Defense Authorization Act for Fiscal Year 1994, requires the Navy to consider the Community's Preferred Reuse Plan as the Proposed Action in the EIS. As such, it is not the intent of this EIS to select a reuse plan nor to substantiate the need for any component thereof. The Reuse Scenario as submitted to the Navy by the BEST Committee (as the entity which prepared the plan on behalf of the local community) is a conceptual plan and is not intended to provide the level of engineering and design detail which will be necessary for the purpose of evaluating a scenario pursuant to ACE permit responsibilities given the Clean Water Act and the Rivers and Harbors Act. As noted in the response to Comment DOI-4, this FEIS does not preclude the possible need for future NEPA review of specific components of the Reuse Plan prior to implementation.

Section 2.1 (Background: Preparation of Reuse/Redevelopment Plan) was included in Section 2 since it provides a logical basis for describing the Alternative Reuse Scenarios prepared by BEST. Although this is a critical portion of the EIS, it is not important whether it is included in Section 1 or Section 2 of the document.

- d. To provide information to decision makers and the public.
- e. To assist the RDA in implementing a preferred plan.

No analysis was presented of the needs associated with each proposed action. Need and purpose are generally not equivalent. Both the needs and purposes should be presented and explained. In particular, the needs associated with the reuse and development alternatives should be presented. For example, the need for a new Marine Cargo Terminal with consideration of the already existing and planned Daniel Island facilities.

Article 2.1 presents information on the purpose of the reuse and development plans. Because these plans are an integral part of the proposed action, this discussion of purpose should be incorporated into Section 1 of the report.

3. Alternatives Analysis. The bulk of the draft EIS discusses three alternative reuse scenarios. However, there is no presentation in the document of the needs used in selecting these alternatives. An EIS should not simply declare alternatives. It should explain the needs and logic used in selecting them and in ruling out other possible alternatives.

The alternatives analysis proposes construction of a Marine Cargo Terminal. However, there is no analysis of need relative to the existing port facilities in the Charleston area or the planned new facilities on Daniel Island. The synergistic effects of the proposed and existing port facilities must be addressed in the documentation of need.

Article 4.4.5 states that the preferred alternative proposes building the Marine Cargo Terminal on pilings rather than by filling. The statement is made here and at article 5.2 that this would not significantly alter the river's hydrology. There is insufficient information or analysis presented in the report to support this claim. Construction of a cargo terminal on pilings may significantly affect dredging maintenance in this area. Sediments may accumulate around the pilings thus affecting the river. Without appropriate modeling of the river and the proposed structures, the claim that no affect would occur is not reliable. There is also insufficient information or analysis presented to verify whether or not construction of a cargo terminal on pilings is economically or technically feasible at this site.

4. Permit Requirements, Laws, and Regulations. Article 5.1 lists the laws and regulations which were considered during preparation of the draft EIS. However, the following applicable laws and regulations may need consideration and listing.

The Rivers and Harbors Act of 1899
The Marine Protection, Research and Sanctuaries Act
The Fish and Wildlife Act of 1956
The Migratory Marine Game-Fish Act
The Marine Mammal Protection Act of 1972
33 CFR Parts 320-330

ACE 3 - Section 2 (Alternatives) of the FEIS provides a discussion of the Alternative Reuse Scenarios. As noted, each of the Scenarios are based on plans as developed by the BEST Committee. Alternative Reuse Scenario 3 (including Development Concepts 3, 3A, and 3B) were determined by BEST and the Redevelopment Authority as the Preferred Alternative, and is considered as such in the FEIS. Alternative 1 is based on the Asset Management Plan as prepared by the BEST Committee, and Alternative 2 is based on the Community Redevelopment Plan as prepared by the BEST Committee. Since Scenarios 1 and 2 did not propose uses for the entire 1,500 acres of the Base, the Navy supplemented the Scenarios by proposing uses for the portions of the Base for which BEST did not propose uses. This logic is stated in the DEIS.

The need for a Marine Cargo Terminal was determined by the BEST Committee. The Navy does not intend to analyze the need for such a facility, but rather is addressing it on a conceptual level since it was included in the Preferred Reuse Plan as approved by BEST. As noted in Section 2.3.3.2, the FEIS includes Development Concept 3B which was developed at the request of the City of North Charleston. This Concept does not include a Cargo Terminal.

The issue of the potential impacts of the Cargo Terminal on the Cooper River, including the potential hydrologic impacts of piling, is addressed in Section 4.4 of this FEIS. The entity overseeing development of the Cargo Terminal would be responsible for conducting detailed hydrologic modeling of the Cooper River, and for determining if the construction of a Cargo Terminal at this location is economically or technically feasible.

ACE 4 - Comment noted. Section 5 of this FEIS has been revised and updated.

Article 5.2 does not address permit requirements under the Rivers and Harbors Act. In particular, bridges over Federal navigable waters require permits from the U.S. Coast Guard. Other structures in navigable waters require permits from the Corps of Engineers.

Section 5 lists permits and licenses which have been issued to facilities at the Naval Shipyard. However, none of the many permits issued by the Army Corps of Engineers to the U.S. Navy have been listed. Such permits have conditions which may affect future development plans. Furthermore, such permits will need to be transferred from the Navy to the future property owner.

Article 5.3 states that a permit pursuant to Section 404 of the Clean Water Act will only be needed if more than ten acres of wetlands will be lost. This is incorrect. A 404 permit from the Army Corps of Engineers is required for any quantity of fill in Waters of the United, including wetlands. What the author may be confusing is the distinction between the Individual Permit (IP) process and the Nationwide General Permit (NWP) process. Both IP's and NWP's are issued by the Corps of Engineers.

5. Analysis of Adverse Effects. Article 5.2 states that development in wetland areas has been avoided. However, the preferred alternative includes impacts to about 78 acres of wetlands. These are inconsistent statements.

Section 6 lacks sufficient detail or analysis to verify the conclusions stated. For examples,

- a. Modeling of the effects of the proposed cargo terminal should be done.
- b. Remediation of contaminants should be fully discussed based on the proposed redevelopment uses of each contaminated site.

In general, the presented discussion of adverse effects is incomplete and inadequate for the purpose of evaluating the alternative redevelopment scenarios pursuant to the ACE permit responsibilities given in the Clean Water Act and the Rivers and Harbors Act.

6. Navigation Impacts. In addition to the above comments on the Regulatory aspects of the DEIS, we have coordinated with our Engineering and Planning Division. Their review indicates that the location of the State Ports Authority terminal needs further investigation and ship simulation modeling to ensure safe navigation.

In future correspondence concerning this matter, please refer to our file number SAC-41-94-3015-V. A copy of this letter is being forwarded to the addressees on the enclosed list for their information.

I thank you for the opportunity to review the draft EIS and look forward to continued coordination. I would also like to take this opportunity to indicate that the Corps is aware of the significance of this base closure action and stands ready to work with interested parties in addressing the

ACE 5 - Since the Reuse Plan addressed in this FEIS is conceptual, it is acknowledged that the level of detail and analysis is insufficient for the purposes of evaluating the Base redevelopment pursuant to the ACE permit responsibilities given the Clean Water Act and the Rivers and Harbors Act. Because the Navy currently holds over 200 permits from ACE for various piers, structures, and activities, it was not feasible to list them all, however a note indicating this has been added to Table 5-1. Detailed hydrologic modeling of the Cooper River would need to be completed prior to permitting of the proposed Cargo Terminal if the facility is proposed at all. In addition, at such time as specific redevelopment activities are known, the impacts of site contamination will be better able to be defined since ongoing RCRA related studies will likely be completed at that time.

Section 6 (Unavoidable Adverse Effects) of the FEIS has been updated to include the need for hydrologic modeling.

ACE 6 - Comment noted. The entity responsible for overseeing construction of a Cargo Terminal would be responsible for completing modeling of the Cooper River, including ship simulation modeling prior to the permitting of the proposed Cargo Terminal Facility.

myriad of issues raised by redevelopment of the area. We are committed to early coordination which will hopefully lead to reasonable, viable plans for alternative uses of the Charleston Naval Base property. If you have any questions regarding this letter, please feel free to contact me or Messrs. Fred Veal or Steven J. Coker at the address given above or at phone number 803-727-4330.

Respectfully,


Clarence A. Ham
Chief, Regulatory Branch

Enclosure

Copy Furnished:

U. S. Environmental Protection Agency
Region IV, Wetlands Regulatory Unit
345 Courtland Street
Atlanta, Georgia 30365

United States Department of Interior
Fish and Wildlife Service
Post Office Box 12559
Charleston, South Carolina 29412

Mr. H. Stephen Snyder
S. C. Department of Health
and Environmental Control
Office of Ocean and Coastal
Resource Management
4130 Faber Place, Suite 300
Charleston, South Carolina 29405

South Carolina Department of
Health and Environmental Control
Bureau of Water Pollution Control
2600 Bull Street
Columbia, South Carolina 29201

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Commissioner: Douglas E. Bryant

Board: Richard E. Jabbour, DDS, Chairman
Robert J. Stripling, Jr., Vice Chairman
Sandra J. Motlander, Secretary

Promoting Health, Protecting the Environment

William E. Applegate, III
John H. Burnee
Tony Graham, Jr., MD
John B. Pate, MD

November 6, 1994

Commander, Southern Division
Attention: William Sloger
Naval Facilities Engineering Command
2155 Eagle Drive, PO Box 190010
North Charleston, SC 29419-9010

RE: Draft Environmental Impact Statement for Disposal and Reuse of
the Charleston Naval Base North Charleston, SC (EIS)

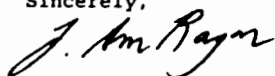
Dear Mr. Sloger:

The South Carolina Department of Health and Environmental Control, Environmental Quality Control appreciates the opportunity to review the EIS. I would like to commend the Navy on the high quality of this document. It is recognized that this EIS is solely based on the information that is available at this time. As additional information becomes available, modifications may be necessary. We will continue to address the environmental aspect of this process through our regulatory framework.

DHEC 1 - Comment noted.

Should you have any questions, please contact me at 803-734-4721.

Sincerely,



F. Ann Ragan
Federal Facilities Liaison
Environmental Quality Control

cc: Doyle Brittain, EPA
Pat Franklin, Naval Base Charleston
Bobby Dearhart, Naval Base Charleston
Joe Bowers, DHEC BSHWM
David Walton, DHEC BSHWM
Rick Richter, DHEC Trident District

South Carolina Department of Natural Resources



James A. Timmerman, Jr., Ph.D.
Director

December 12, 1994

Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, P.O. Box 190010
North Charleston, S.C. 29419-9010
ATTN: William Sloger

REF: Draft Environmental Impact
Statement (DEIS) for Disposal and
Reuse of the Charleston Naval Base,
North Charleston, South Carolina

Dear Mr. Sloger:

As you are aware, the S.C. Department of Natural Resources (SCDNR) is one of several agencies, both State and Federal, functioning in the role of Natural Resource Trustee for activities on Naval Base Charleston. In this role, it is our responsibility to provide, to the best of our ability, input into the closure and reuse processes regarding proposed activities and their potential effects on the natural resources under our authority. In partial fulfillment of these responsibilities, personnel of SCDNR have participated in several meetings and have conducted a limited review of the above referenced DEIS. We offer the following comments.

Many of our concerns were discussed at the Interagency meeting held on November 28, 1994, at the offices of the Office of Ocean and Coastal Resource Management (OCRM) of the S.C. Department of Health and Environmental Control (SCDHEC). These concerns bear reiterating for the purposes of this letter. Of primary concern is the fact that the DEIS document does not adequately address the extent of potential environmental impacts which are associated with the various alternative reuse scenarios. Without substantial further study or documentation, it is difficult for us to determine which of the Reuse Scenarios presented actually represents the most desirable from an environmental perspective. Some of the information which would be needed to render such a position is presented in Table 2-5, Comparison of Environmental Impacts, and Table 2-6, Comparative Evaluation Matrix: Key Factors and Criteria. In addition to the need to enhance this

DNR 1 - The discussion of alternative reuse scenarios has been enhanced in the FEIS in an effort to provide a more comparative evaluation of environmental impacts. However, it should be noted that by law, the Pryor Amendment requires the Navy to consider the community's approved Reuse Plan as the proposed action for the purposes of the NEPA EIS process (See Section 1.2 of the FEIS).

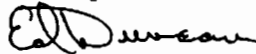
South Carolina Geological Survey • 3 Geology Road • Columbia, S.C. 29210-9998 • Telephone 803/896-7708
EQUAL OPPORTUNITY AGENCY • PRINTED ON RECYCLED PAPER

William Sloger
December 12, 1994
Page 2

information, we have some concerns regarding how the information in Table 2-5 is summarized in Table 6. First, there are numerous locations where there is no symbol indicating whether or not the stated criteria for a particular category are met, whereas there are symbols utilized for those categories which completely meet or partially meet these criteria. Does this mean that the criteria are not even partially met or does it mean that it was not considered? Also, there are several categories for which the information presented in Table 2-5 does not agree with the Comparative Evaluation in Table 2-6. For example, in Table 2-5 wetland impacts are identified as none for Reuse Scenarios #1 and #2, as approximately 77.5 acres for Reuse Scenario #3, and as 9.3 acres for #3A. However, in Table 2-6, it is indicated that Reuse Scenarios #1 and #3A fully meet the criteria, #2 only partially meets them, and there is no symbol for #3. There are similar contradictions for other resource categories. Table 2-6 appears to warrant some attention and revision if it is to adequately reflect the information presented in Table 2-5.

One of the stated purposes of this DEIS is to "assist the Redevelopment Authority in implementing a preferred plan and supplementing future planning and redevelopment decisions", and that "This EIS identifies potential environmental impacts which would result from redevelopment of the property pursuant to the proposed Reuse Plan (and its modified version) and its reasonable alternatives". The conceptual nature of this document leaves the reviewer with many questions regarding the full extent of environmental impacts which could occur from the implementation of any of the various Reuse Scenarios. Specifically related to Reuse Scenarios #3 and #3A, additional information is needed in a variety of areas, including but not limited to dredging needs for each, the potential for the need to construct a new turning basin; better documentation and delineation of the different types of potentially impacted wetlands, including both short-term and long-term impacts; more information regarding nature and extent of the contamination in various areas and the proposed remediation efforts for them; as well as others. All of these are significant issues that must be addressed in final plans to implement the preferred alternative.

Sincerely,



Robert E. Duncan
Environmental Programs Director

RED/kh

DNR 2 - Tables 2-5 and 2-6 of the DEIS (Tables 2-7 and Table 2-8 of this FEIS) have been revised and updated to make them easier to understand.

DNR 3 - Comment noted. The Navy acknowledges that the conceptual nature of the Reuse Plan submitted by the BEST committee makes detailed impact evaluation and quantification difficult. By nature, it is a conceptual plan which provides guidance on projected land uses and redevelopment activities at the Base over the next 20 years rather than detail on specific developments or components of the Plan. It is also acknowledged that considerable planning and engineering studies will need to be undertaken by the Redevelopment Authority and/or specific project developers prior to implementing specific redevelopment activities. Dredging has been addressed in greater detail in Section 4.4 of this FEIS. As noted in the comment, more detail on dredging needs and potentially a turning basin will need to be determined, prior to the issuance of a Section 10 permit by the Corps of Engineers and approvals by the State Office of Ocean and Coastal Resource Management. While this FEIS includes additional detail and clarification of the wetlands present at the Base, full delineations will need to be done prior to specific development activities in the vicinity of these areas.

In addition, since the RCRA Facility Assessment is ongoing, information regarding the identification of contaminated areas is not currently available. The nature and extent of contamination is being documented in a RCRA Facility Investigation which is also ongoing. Upon completion of the RCRA Facility Investigation, a Corrective Measures Study will be undertaken to evaluate various cleanup alternatives before the cleanup method is selected for each area (see EPA Comments dated December 9, 1994 and Sections 3.13 and 4.13 of this FEIS).

William Sloger
December 12, 1994
Page 3

cc: Jane Settle, SCDNR
Ann Ragan, SCDHEC
Joe Bowers, SCDHEC
Diane Duncan, USFWS
Trey Brown, NOAA
Rob Mikell, SCDHEC-OCRM
Pat Franklin, BRAC Coordinator
Bobby Dearhart, BRAC Coordinator
Tony Hunt, SOUTHDIV
Thuane Fielding, SOUTHDIV

H-12



United States Department of the Interior

OFFICE OF THE SECRETARY OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE

Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

December 13, 1994

ER-94/861

Commander, Southern Division
Naval Facilities Engineering Command
P. O. Box 190010
North Charleston, SC 29419-9010

Attn: William Sloger

Dear Sir:

The Department of the Interior has reviewed the Draft Environmental Impact Statement (DEIS) for the Disposal and Reuse of the Charleston Naval Base. The following general comments are provided for your consideration. Specific comments to the DEIS are included as an attachment.

General Comments:

1. ADDITIONAL ENGINEERING AND DESIGN INFORMATION IS NEEDED

While it is obvious that a considerable amount of effort was invested in this draft document, the DEIS has several major deficiencies. The alternatives presented are conceptual reuse scenarios rather than actual reuse development plans. The detailed engineering and design information needed to accurately quantify impacts has not yet been developed; therefore, the DEIS could most appropriately be defined as a programmatic EIS evaluating, in qualitative terms, the environmental impacts of four conceptual reuse scenarios.

2. DATA AND CONCLUSIONS ARE FLAWED

The DEIS contains a number of conflicting and/or contradictory statements that are not supported by the data presented. There are also a number of invalid comparisons of the projected impacts of the alternatives which can lead to erroneous conclusions. All of these appear to be for the purpose of justifying the selection of the Preferred Development Plan (PDP).

DOI 1 - It is acknowledged that the DEIS addresses conceptual reuse plans; however, the Navy does not agree that it should be considered programmatic. Detailed engineering and design information, while not currently available, will be required to be prepared and reviewed through subsequent state and federal permit review and approval processes (see Section 2.2.1 [Future Actions] of this FEIS).

DOI 2 - Specific comments as made by the Department of the Interior are addressed herein. Regarding the selection of Alternative Reuse Scenario 3 as the Preferred Alternative Scenario, it should be clarified that, by law, the Pryor Amendment requires that the Navy consider the community's approved Reuse Plan as the proposed action for the purposes of the EIS. The DEIS does not attempt to justify the selection of this scenario, merely to address potential impacts of this conceptual plan.

3. OBSTACLES TO IMPLEMENTATION OF PDP AND CONTINGENT DEVELOPMENT PLAN (CDP) NOT FULLY EXPLAINED

There are a number of significant factors which could make the PDP and the (CDP) impossible to implement, including contamination on the Charleston Naval Base (CNB). While the document contains a number of references to some of these limitations, the references are scattered throughout the DEIS. This manner of presentation of these limitations dilutes their significance. It was suggested at the November 28, 1994, meeting that the Navy revise the DEIS to include a section which addresses the obstacles which would have to be overcome to implement either the PDP or the CDP. The Department agrees with this recommendation.

4. NEED FOR ADDITIONAL NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTATION NOT STATED

The DEIS contains a number of references to the additional reviews that would be required for necessary permits for the PDP and the CDP as well as the additional coordination required by regulatory and natural resource trustee agencies. The document, however, does not clearly indicate that additional NEPA review and documentation would be required in order to implement the PDP and CDP. Implementation of either of these plans would result in significant impacts on the human environment, yet the actual scope of those impacts cannot be determined until project specific engineering and design plans are available. It is imperative that supplemental NEPA documentation be prepared and circulated for public review. We are concerned that unless this need is clearly stated in this NEPA document, entities involved with the actual implementation of the reuse plan may assume that NEPA requirements for the addressed alternatives have been met and no further evaluation of impacts is necessary.

The fish and Wildlife Service (FWS) has voiced concern a number of times regarding the schedule for NEPA review of reuse plans. Without adequate data on the nature and extent of site contamination and appropriate remediation measures, the appropriate reuse of the property cannot be determined. We understand the Navy's need to make some decisions regarding disposal of surplus property at the CNB well in advance of the April 1, 1996, operational closure date. However, due to the essentially conceptual nature of the evaluated reuse scenarios in this DEIS and the subsequent inability to quantify and assess impacts, we urge the Navy to include in the final EIS a clear and prominent cautionary note regarding the need for additional NEPA activities for actual implementation of the PDP or other operational scenarios.

DOI 3 - Comment noted. See Section 2.2.1 (Future Actions) of this FEIS.

DOI 4 - This FEIS does not preclude the possible need for future NEPA review of specific components of the reuse plan prior to implementation. All federal agencies must comply with NEPA prior to undertaking, approving, or funding an action which may result in significant environmental impacts. As such, any federal agency which is involved in the redevelopment of the Charleston Naval Base property must comply with NEPA and prepare either an EA or an EIS if determined appropriate. The Navy would be responsible for conducting additional NEPA documentation if the Preferred Alternative Scenario is significantly modified prior to the title of the property in question being transferred to a new owner (i.e., the Redevelopment Authority). Following the transfer of title by the Navy to another entity, other federal agencies (e.g., the Army Corps of Engineers, Department of the Interior, etc.) may undertake subsequent NEPA actions if warranted.

It should be noted that the State of South Carolina does not have any State laws or regulations requiring the preparation of an EIS. See also Section 2.2.1 (Future Actions) of this FEIS.

5. TRANSFER OF CNB LANDS TO NATIONAL PARK SERVICE (NPS)
FOLLOWING CONTAMINANT ASSESSMENT AND REMEDIATION

Certain portions of CNB have been identified in the document as possessing outstanding potential for public park and recreational use. Under Section 203(k)(2) of the Federal Property and Administrative Services Act (FPASA) of 1949, as amended by Public Law 91-485, Federal real properties which have been determined to be surplus to the needs of the Federal Government may be conveyed to State and local governments for park and recreational purposes. These properties may be assigned to the Secretary of the Interior for further transfer by the NPS's Federal Lands-To-Parks Program at up to 100 percent discount from fair market value. To ensure permanent protection of the resources, these properties must be dedicated in perpetuity for public park and recreational purposes.

The City of North Charleston and the Charleston County Parks and Recreation Commission contributed to the development of the Base Reuse Plan identifying various parcels of the installation which would be appropriate for public park and recreational use and open space. These areas include the golf course; active recreation areas, including the Chicora Tank Farm site; the cultural park; and the marina and associated wetlands. All three reuse scenarios discuss and identify by acreage the portions which would be used for recreation. Subject to review of these sites for contamination and completion of any remediation that is needed we recommend that a transfer of acceptable properties be accomplished under FPASA.

Please note that we are specifically concerned with the method of transfer of the park and recreation resources on this base. We understand that the Redevelopment Authority is considering requesting the total base under an Economic Development Conveyance (EDC). While certain portions of CNB such as the port facilities are appropriate for economic development purposes, we believe the portions identified for public park and recreation purposes should be conveyed under the existing public benefit authority, Section 203 (k) (2) of the FPASA. The long-term public benefit of this conveyance method is that the subject parcels will be protected for public park or public recreational purposes in perpetuity. Conveyance from the Navy through an EDC to the Redevelopment Authority would not provide for the long-term protection and stewardship of these public trust resources.

Further, according to the Department of Defense (DOA) Directive and instruction of April 6, 1994, and the DOA Pryor Amendment Implementation Memorandum of October 18, 1994, the EDC is an addition to the existing public benefit authorities and, generally, should not be used when these public benefit authorities apply. The DOA Implementation Memorandum states that the EDC is not intended to supplant other Federal property disposal authorities and cannot be used if the intended land use

DOI 5 - It is the Navy's policy to dispose of the Charleston Naval Base such that the community's identified Reuse Plan, referred to as Alternative Reuse Scenario 3, can be realized. As such, it is the Navy's intent to transfer the entire 1,500 acre Charleston Naval Base property to the Charleston Naval Base Redevelopment Authority. The Redevelopment Authority would then be responsible for determining appropriate uses and users of the property consistent with either Development Concept 3A or 3B. Since these Plans specifically provide for recreational and open space land uses, ownership of these areas would be subject

North Charleston, Charleston County, and other interested agencies. The Navy fully supports and endorses the establishment of park and recreational uses as proposed in the Preferred to discussions between the Redevelopment Authority, the Department of the Interior, the City of North Charleston, Charleston County, and other interested agencies. The Navy fully supports and endorses the establishment of park and recreational uses as proposed in the Alternative Reuse Scenario 3 (including Concepts 3, 3A, and 3B).

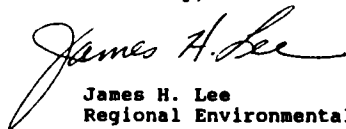
can be accomplished through another authority, unless unusual circumstances are presented which demonstrate that needed economic development and job generation cannot occur under the other allowable Federal transfer authority. These public benefit authorities include the public park or recreation and the historic monument public benefit discount conveyances, both of which are sponsored by the NPS.

Because of the significant park and recreational resources present, the NPS recommends that, whichever reuse scenario is selected, the alternative should provide for the assignment of the public park and recreation portions of CNB to the NPS for transfer to local governments for public park and recreational purposes under Section 203 (k) (2) of the FPASA. It may be possible for the NPS to convey to the State chartered Redevelopment Authority, rather than to local governments, if the Authority's enabling legislation includes the provision of public recreation in its legal mandate.

The Federal Lands-to-Parks Program assists state and local governments in applying for property suitable for park and recreational purposes. For information on the program, please contact Bill Huie, NPS, Southeast Region, 75 Spring Street, S.W., Atlanta, Georgia 30303, or telephone 404-331-2610. For additional information or questions regarding fish and wildlife-related comments, please contact either Jon Andrew at 404/679-7123, or Roger Banks at 803/727-4707.

Thank you for the opportunity to review and comment on this draft EIS. Additional comments are attached.

Sincerely,



James H. Lee
Regional Environmental Officer

DISPOSAL AND REUSE - CHARLESTON NAVAL BASE

Specific Comments:

Page ix: As was pointed out by the Army Corps of Engineers (COE) at the November 28 meeting, relocation of the Cargo Terminal closer to the federal navigation channel as proposed in the CDP would not necessarily result in "less maintenance dredging", particularly if this plan necessitates construction of a turning basin. Site-specific modeling is necessary to determine sedimentation rates and associated dredging requirements.

Page x: At this time, there are no data to support the conclusion that constructing the Cargo Terminal on pilings rather than fill in the Cooper River "would have minimal long-term affects (sic, effects) on the Charleston estuary" Potential impacts from piling-supported structures include removal of wetland vegetation, shading, compaction and siltation from construction activities, alteration of hydrologic regimes, loss of habitat, water quality degradation, and continuous human disturbance. Cumulatively, these impacts could result in significant losses of aquatic resources.

Further, piling-supported construction may require a Clean Water Act (CWA) Section 404 permit for fill in wetlands under new regulations published by the COE under the "Tulloch Rule." The Final Rule requires a COE permit, pursuant to Section 404 of the CWA, when the placement of pilings has or would have the effect of a discharge of fill material.

Clarification is needed for what impacts to localized groundwater quality "would be short-term and would last for the duration of construction only." Impacts to groundwater quality are typically of a long-term nature and require considerable time to remediate.

Clarification is also needed for the last sentence in the second full paragraph--"The Preferred Development Plan would not affect groundwater quality."--as it relates to the previous sentence--"Although construction of the rail/highway access from I-26 to the Marine Cargo Terminal and Intermodal Railyard would result in impacts to the water quality and hydrology of Shipyard Creek and to localized groundwater quality, these impacts would be short-term and would last for the duration of construction only."

DOI 6 - Comment noted. See specific responses to comments as generated by the Army Corps of Engineers. Dredging impacts are addressed in Section 4.4 (Water Quality and Hydrology) of this FEIS.

DOI 7 - The assessment of long-term effects on the Charleston estuary from construction of the cargo terminal was revised in the Executive Summary (and in sections 4.4 of the FEIS) to address additional potential impacts and their cumulative effect.

DOI 8 - The requirement for a Corp of Engineers permit to construct the cargo terminal on pilings is included in the Executive Summary, Table 2-5, Section 4.4.1, and Section 5.2. The Corp will determine whether a Section 10 or Section 404, or both, is required. See also Section 2.2.1 (Future Actions) of this FEIS.

DOI 9 - Comment noted. Upon further consideration, short-term impacts to localized groundwater due to construction activities have been deleted from this sentence.

DOI 10 - This statement refers to long-term use of the property following redevelopment. With the exception of hazardous materials spills, no long-term impacts to groundwater are anticipated.

Page xiii: It is stated that the proposed rail/road corridor would reverse a regulated waste site or area of unknown contamination. No new construction should proceed until all areas of site contamination are identified and corrective measures are identified and accomplished.

Pages xiv and xv, Issues to be Resolved: There are a number of significant issues that must be resolved, including the basic ones of whether the site is physically suitable for a cargo/port terminal (e.g., current velocities, dredging requirements, physical impact to the Charleston Harbor Federal Navigation Project, wetlands/open water impacts, etc.) and whether the SPA chooses to use the site in the event it is determined to be suitable. Due to the fact that some necessary studies and investigations have not yet begun while others are ongoing but have not been completed, the Department of Interior (DOI) believes supplemental NEPA documentation will be necessary.

Page 1-1: The "potential impacts" associated with implementation of the reuse plan prepared by the BEST Committee addressed in this DEIS are primarily general and qualitative in nature. The Introduction should clarify this.

Pages 2-6 through 2-12: The descriptions of Alternative Reuse Scenarios 1 and 2 should include acreage and percentages of the CNB that would be developed for active and passive recreation as is included in the description of Scenario 3A of the PDP, in order for the reviewer to clearly see alternative differences in these major land use categories.

Page 2-24: The proposal of the PDP to develop the Chicora tank farm into a 27-acre recreation area may not be implementable or may be delayed for a considerable length of time due to site contamination. Some site remediation has already been accomplished; however, no decisions have yet been made regarding ultimate site remediation.

The last sentence of section 2.3.3 refers to the Base's total 1,400 acres. Page 1-3 states the CNB consists of 1,575 acres located on the west side of the Cooper River. Please clarify and/or correct this discrepancy.

Page 2-28 and 2-29: In the description of the CDP, it is stated that the PDP was redesigned to avoid impact to substantial wetland areas; however the preceding description of the PDP does not mention any wetland impacts. Significant wetland impacts should be presented.

If Solid Wastewater Management Unit (SWMU) 9 cannot be cleaned up to levels which would permit industrial development as proposed in the PDP, it is highly unlikely that the DOI would view the area

DOI 11 - Comment noted. The corridor alignment as proposed in Development Concept 3 and 3A is conceptual and is subject to modification based on studies of adjacent industrial lands which may contain contamination. The alignment of this road/rail corridor should be approved by both EPA and the State Department of Health and Environmental Control to ensure that all contaminated areas are being mitigated and/or avoided. See comment EPA 13.

DOI 12 - Comment noted. See Section 2.2.1 (Future Actions) of this FEIS.

DOI 13 - Comment noted.

DOI 14 - Comment noted. Although Tables 2-1 and 2-2 do include acreages of active recreation, they have been revised to include passive recreation acreage as well.

DOI 15 - Comment noted. Site remediation of the Chicora Tank Farm area will be determined based on the conclusions of the ongoing RCRA Facility Investigation and the Corrective Measures Study. See comment 4 EPA and comment 5 EPA.

The total acreage of the Naval Base was stated incorrectly in the last sentence of Section 2.3.3. This has been corrected in the FEIS.

DOI 16 - See Comment ACE 1. Wetland impacts of each conceptual reuse plan have been revised based on input and clarification from the Army Corps of Engineers. Appropriate sections of the FEIS have been updated, including Section 2 (Description of Alternatives), Section 3.3 (Wetlands and Floodplains - Existing Environment) and Section 4.3 (Wetlands and Floodplains - Impacts).

DOI 17 - The location of the pre- and post-Hurricane Hugo wading bird colonies are not within SWMU 9 (See Figures 3-5 and 3-17 of the FEIS).

suitable for the reestablishment of the wading bird colonies which were destroyed during Hurricane Hugo.

As with wetland impacts, the preceding PDP description includes no information regarding open water impacts. There is currently no data to support the conclusion that the CDP would require less maintenance dredging than the PDP--apparently the assumption is based on the fact that there would be a smaller area between the terminal and the federal navigation channel to dredge. While this would appear to be a reasonable assumption, site-specific data and modelling are necessary to determine shoaling rates, turning basin requirements, etc. before one can conclude that the CDP will result in less maintenance dredging than the PDP.

Page 2-30: It is premature to state that "environmental impacts can be reduced to acceptable levels." Further engineering design is necessary before impacts to the natural environment can be adequately quantified. Only then can mitigation measures be developed and a determination of "acceptable" impacts be made.

Again, several references are made as to implementing either the PDP or CDP. As pointed out by the COE, studies necessary to determine site suitability for port development have not yet been done.

Pages 2-31 through 2-43, Table 2-5: This table requires substantial revision if it is to show clearly the impacts of the evaluated alternatives which can be projected at this time. A considerable amount of the information provided in Section 4, Environmental Consequences and Mitigative Measures, is not included in this impacts summary table. Measures to mitigate adverse environmental impacts are improperly discussed in this table, in that the alternatives do not include the mitigative measures. Positive impacts associated with scenarios 1 and 2 are not listed. Impacts which at this time could be quantified, such as the types and acreage of various habitats that would be affected, are also not included. Statements regarding a lack of impact to a given resource are included.

Page 2-31: Acreage figures presented in Tables 2-1 through 2-4 showing major land uses (such as active and passive recreation, open space community support, etc.) associated with each alternative should be summarized in this table to provide a clear comparison of the alternatives' impacts on land use and aesthetics.

Page 2-32: The positive impacts of Scenarios 1 and 2 on terrestrial and aquatic vegetation and wildlife should be noted. These would occur as a result of the greater amount of open space/natural areas, more public recreation areas, and less intensive commercial and industrial development.

DOI 18 - Comment noted. Additional information regarding potential maintenance dredging is provided in the FEIS (see Section 4.4). Additional analysis of the degree of maintenance dredging that would be required by scenarios 3 and 3A was performed and a comparative evaluation of dredging impacts was included in Section 2.3.3.1 of this FEIS.

DOI 19 - Comment noted. A statement has been added to indicate that additional detailed studies will be needed to further quantify impacts and to ensure that environmental impacts are mitigated to acceptable levels. These studies will need to be prepared at such time as specific redevelopment proposals are finalized and submitted to appropriate state or federal agencies for review and approval. See Section 2.2.1 (Future Actions).

DOI 20 - Comment noted. Table 2-5 of this DEIS (noted as Table 2-7 in the FEIS) has been expanded to accommodate additional information as presented in Section 4 (Environmental Consequences and Mitigative Measures). However, it should be noted that Table 2-5 provides a summary for comparative purposes only and that a more detailed discussion of potential impacts is provided in Section 4 of this FEIS.

DOI 21 - In order to minimize the repetition of information throughout the DEIS and to minimize its length, acreage figures, provided in Table 2-1 through 2-4, were not included in Table 2-7.

DOI 22 - Comment noted. Table 2-5 of the DEIS (noted as Table 2-7 in the FEIS) has been expanded to accommodate additional information as presented in Section 4 (Environmental Consequences and Mitigative Measures). However, it should be noted that Table 2-7 provides a summary for comparative purposes only and that a more detailed discussion of potential impacts is provided in Section 4 of this FEIS.

The discussion of the impacts of the PDP and the CDP on terrestrial and aquatic vegetation and wildlife are inadequate and substantially understated. In Section 4 of the DEIS, we find information stating the PDP includes filling 82 acres of open water in the Cooper River; the CDP would affect about 130 acres of open water. Both plans call for a railroad over Shipyard River which could result in a substantial reduction in the quality and value of existing resources. No data are provided as to the types and amounts of existing terrestrial habitats which would be affected by these plans. Acreage and types of terrestrial and aquatic habitats that would be affected by each plan should be listed in this summary table.

The sentence regarding the lack of effects on the tidal marshes and mudflats along Shipyard Creek and Noisette Creek should be eliminated because 1) noting the lack of an impact in a summary table of impacts is inappropriate; and, 2) "tidal marshes and mudflats" are wetlands which would be more appropriately addressed in the following "Wetlands and Floodplains" category.

Page 2-33: It is stated that the effects on threatened or endangered species (i.e., least tern) would be similar to that for the Preferred Development Plan. We could find no reference to impacts of the PDP on any threatened or endangered species in Table 2-5.

The positive impacts of the reuse developments proposed under Alternatives 1 and 2 on wetlands and floodplains should be included.

It is premature to determine that the loss of 77.5 acres of freshwater wetlands on the CNB could be compensated. Are all of the wetlands, which are projected to be lost under this scenario, freshwater wetlands inland of Shipyard Creek? What are the effects of the PDP on wetlands of the Cooper River, including vegetated and unvegetated estuarine intertidal (regularly flooded) wetlands?

Also, it does not appear that appropriate modeling has yet been performed to make judgements as to the flood-level effects of filling 82 acres of open water in the Cooper River as proposed in the PDP. If such modeling has been conducted, this information should be provided.

Page 2-34: We have essentially the same comments regarding the discussion of the wetlands and floodplains impacts for Scenario 3A as for the PDP. Please clarify what type of wetlands constitute the 9.3 acres which this alternative is stated to affect. In addition, the discussion regarding authorization under a COE nationwide permit should be eliminated. As stated by the COE at the November 28 meeting, it is highly unlikely that a nationwide permit could be used.

DOI 23 - The purpose of Table 2-7 is to summarize impacts only. Although this table has been modified due to previous comments, more detailed discussion of existing vegetation and wildlife resources and potential impacts is presented in Sections 3.2 and 4.2 of the FEIS.

DOI 24 - Comment noted. Text is retained since: 1) it is appropriate to note the lack of impact on Shipyard Creek and the mudflats; and 2) tidal marshes and mudflats are also habitat for terrestrial and aquatic vegetation and wildlife.

DOI 25 - Although the Least Tern is not a federally designated Threatened or Endangered species, it is considered threatened by the State of South Carolina. Potential impacts to the existing Least Tern colony at the Naval Base are identified as adverse impacts under Development Concept 3 in Table 2-5 of the DEIS (noted as Table 2-7 of the FEIS).

DOI 26 - Comment noted.

DOI 27 - The discussions of wetland resources and potential wetland impacts has been clarified in the FEIS to reflect recent input by the Corps of Engineers. See Table 2-7 and Sections 3.3 and 4.3 of the FEIS.

DOI 28 - No hydrologic modeling of the Cooper River to support the design of a cargo terminal has been conducted. Modeling of the flood-level effects from filling for construction of the cargo terminal will be performed by the developer of the Cargo Terminal when specific design information is available.

DOI 29 - The discussions of wetland resources and potential wetland impacts has been clarified in the FEIS to reflect recent input by the Corps of Engineers. See Table 2-7 and Sections 3.3 and 4.3 of the FEIS.

Page 2-15: Both alternatives 1 and 2 would appear potentially to have positive impacts on water quality as there would be lesser levels of industrial and commercial development. Accidental releases of hazardous substances associated with the Navy's use of the area's waterways would be eliminated; spills associated with cargo/port terminal activities would also not occur.

As stated several times, there has been no site-specific hydrologic modeling of the PDP or the CDP which justifies a determination that implementation of these plans would have only minor, long-term impacts to the Cooper River or minimal impacts on the Charleston estuary relative to water quality and hydrology. The PDP does not include detailed enough data to conclude that the construction of the rail/highway access from I-26 to the Marine/Cargo terminal and intermodal railyard would have only short-term, construction impacts on the water quality and hydrology of Shipyard Creek.

Until it is known what types and concentrations of contaminants may be present, one cannot conclude that the PDP would not affect groundwater quality--the driving of pilings could introduce contaminants into groundwater aquifers. Similarly, there is no data to support the conclusion that the CDP would result in a reduction in dredging activities.

Page 2-16: How would the increase in NOx emissions from 356 tpd to 994 tpd affect the Class A Wilderness Area air quality classification at Cape Romain National Wildlife Refuge?

Page 2-17: It is stated that the cumulative impacts and mitigation measures of the CDP on climate and air quality would be similar to those of the PDP. There is no mention of cumulative impacts or mitigation measures in the preceding discussion of the climate and air quality impacts of the PDP. Please clarify and correct the table accordingly.

While it would seem that Alternatives 1 and 2 would result in lower noise levels (thus having a positive short- and long-term impact), Alternatives 1, 2, 3, and 3A are all projected to have noise levels that "would not exceed a DNL of 65dB(a)." Considering that the PDP and the CDP would include a major Cargo Terminal, a Class A Industrial Park, and an Intermodal Railyard generating an average 67,259 vehicular trips per weekday, 12 trains per week, and 3,012 ships per year, this projection of the same long-term noise levels for each alternative does not appear to be correct. Further, these comparisons as contained in Table 2-5 are not consistent with data presented in Section 4.7 Noise Impacts. Finally, how was it determined that the operational noise impacts of both the PDP and the CDP "would not result in a significant long-term problem?"

DOI 30 - Comment noted.

DOI 31 - Conclusions regarding the level of significance of long-term impacts from implementation of scenarios 3 and 3A on the hydrology and water quality of Cooper River and Charleston estuary were restated, addressing the level of currently available detailed data (see Table 2-7 and Section 4.4.1). See also Section 2.2.1 (Future Actions) of this FEIS.

DOI 32 - Comment noted. The data to support conclusions regarding impacts to groundwater quality and comparisons of maintenance dredging needs were reexamined and the assessment of potential impacts revised (see Table 2-7 and Section 4.4.1).

DOI 33 - It should be noted that the Cape Romain NWR is listed as a Class 1, not Class A, air quality area as defined in SCDHEC Regulation 62.5 Air Pollution Control Regulations and Air Pollution Standard No. 7, Section II, Part C. Also, the comment quotes incorrectly NOx emissions as tons per day (tpd); the values in the report are tons per year (tpy). This table is only intended to summarize potential impacts; a more detailed discussion of air quality impacts, including the Cape Romain NWR, is presented in Section 4.6 (Air Quality) of the FEIS.

EPA/SCDHEC designate areas as Class 1 to protect the air quality in these areas. The comment implies that the classification can somehow be changed by the projected increase in NOx emissions. This classification cannot be changed. The EPA has given the NWR area this designation to protect the air quality at the current emissions levels.

DOI 34 - Comment noted. See Section 4.6 of the FEIS.

DOI 35 - The summary of noise impacts as presented in Table 2-5 (Table 2-7 of the FEIS) has been clarified. Under Alternative Reuse Scenario 3 on this table, the last sentence in the first paragraph has been deleted, and replaced with "In general, noise levels at the property line are not expected to result in a significant long-term problem. However, without detailed knowledge of the noise sources associated with reuse or actual sound-level measurements it is not possible to quantify exact noise levels". Refer to Section 4.7 (Noise) of the FEIS for a more detailed discussion of potential noise-related impacts.

Page 2-43: Until the nature and extent of site contamination is known, one cannot be certain that any of the reuse scenarios would not be significantly affected by onsite contamination. Federal property transfer to nonfederal parties is governed in part by the Comprehensive Environmental Response and Liability Act (CERCLA); under federal regulations and South Carolina's Solid and Hazardous Waste regulations, property cannot be transferred until remediation necessary to protect human health and the environment is complete. There is not yet an adequate understanding of the nature and extent of the contamination, much less what remedial measures must be taken. Site contamination may, in fact, significantly affect any or all of these alternatives.

The reuse scenarios themselves have already had an effect on site contamination--CNB has been put on a "fast track" cleanup. Reuse would also have an effect on site contamination relative to the establishment of cleanup goals.

Page 2-44: Table 2-6, Comparative Evaluation Matrix Key Factors and Criteria, needs a complete and objective rework. For the most part, the ratings of "meets stated criteria" and "partially meets stated criteria" appear to have been subjectively determined in a manner not consistent with the data presented in preceding and subsequent sections of the DEIS.

Preceding pages have not indicated that Alternative 2 would have any wetland impacts, yet Table 2-6 indicates this alternative only partially avoids wetland areas. Equally confusing is the fact that the CDP meets the criteria of avoiding wetland areas, although it is projected to impact 9.3 acres of primarily freshwater wetlands and 130 acres of the Cooper River.

What land use impacts are considered in the rating of each alternative such that alternatives 1 and the CDP meet the criterion of minimizing these impacts, while Alternative 2 and the PDP only partially meet the criterion?

What factors are evaluated under the criterion of minimizing water quality impacts?

Table 2-5 indicates under Cultural Resources that none of the alternatives would affect any area of archaeological sensitivity, but that any future ground disturbance in the vicinity of site 38CH1496 may result in some adverse impacts.

Do any of the alternatives propose ground disturbance in the vicinity of site 38CH1496? Is this the deciding factor of the "minimize impact to cultural resources" criterion? If not, what factors are considered and why do all of the alternatives only partially meet the criterion?

DOI 36 - Comment noted. Refer to DEIS comment letter from EPA dated December 9, 1994. The Navy acknowledges that the property cannot be transferred until contaminated areas have been remediated to the satisfaction of the EPA and SCDHEC.

DOI 37 - Comment noted. Table 2-6 (Table 2-7 in the FEIS) has been revised.

DOI 38 - The DEIS states that none of the alternatives would affect any area of archeological sensitivity since Site 38CH1496 would likely be avoided and since an Agreement would be made between the Navy and the State Department of Archives and History (SCDAH) ensuring that cultural resources would be protected. See correspondence from the SCDAH as included in the FEIS. Potential impacts were identified due to the conceptual nature of the alternatives and the lack of detail regarding specific components of the plan. SCDAH will ensure that impacts to Site 38CH1496 will be avoided and/or mitigated.

The PDP would maximize impacts to wildlife; how was it determined that this alternative would partially meet the criterion of minimizing impacts to wildlife? The CDP may result in fewer adverse impacts to wildlife and this may partially meet this criterion, but the available data do not necessarily support this projection. Detailed engineering and design plans are necessary before the true impacts of the plan on wildlife can be determined with confidence.

Pages 2-30 and 2-45: Detailed modeling of the hydraulics/hydrology of the site relative to its physical suitability for a cargo/port terminal have not been conducted; neither has the willingness of the SPA to locate such a facility at the DNB nor the quantitative environmental impacts of such a facility been determined. Thus, it is premature to state that the CDP "could be implemented" or that the CDP would result in "less environmental impact."

The statement that "The Navy has also identified Alternative 3 as the preferred plan" and the fact that the Navy has developed a contingent plan simply by a minor relocation of the facilities identified in the PDP indicates an endorsement of the PDP. Is this the case?

Page 3-14: Section 3.2.1, Terrestrial and Aquatic Environment Vegetation, should present in tabular form the acres of each habitat/land cover type shown in Figure 3-4. This would allow a quantitative assessment of the impacts of the various alternatives on each habitat/land cover type.

Page 3-36: While the CNB areas that have been utilized as wading bird rookeries may provide only "marginal habitat", no wading bird rookery habitat in the Charleston Harbor estuary is insignificant. This habitat type is extremely limited in the Charleston Harbor area; elimination of existing rookery habitat in the area is currently limiting South Carolina's wading bird populations.

Pages 3-27 through 3-34, including figures 3-6 and 3-7: Total acreage of each type of wetland on the CNB should be calculated and presented in tabular form in this section.

As no distinction was made in mapping estuarine intertidal marshes and mudflats, under what classification are they shown on figures 3-6 and 3-7? Most, if not all, of these habitats along the Cooper River and in Shipyard Creek are regularly flooded, yet Figure 3-7 shows no estuarine, intertidal, regularly flooded wetlands. It is stated that the area of historic salt marsh that has been nearly hydrologically isolated from Shipyard Creek is identified in Figure 3-7 as E2EM/PEM. We cannot find this delineation on Figure 3-7.

DOI 39 - The Alternative Reuse Scenario 3 was identified as partially minimizing impacts to wildlife resources since it retains the marshes and mudflats along Shipyard Creek and in the vicinity of the existing marina. It is acknowledged that detailed engineering and design studies are needed in order to more accurately quantify impacts prior to implementation of specific components of the plan (e.g., cargo terminal, bridge across Shipyard Creek, etc).

DOI 40 - While it is acknowledged that detailed modeling of the site and Cooper River has not been conducted and that ongoing Site Investigation studies must be completed prior to site redevelopment, the statement that Development Concept 3A "could be implemented" is based on discussions with EPA, SCDHEC, and the Redevelopment Authority. The lack of a commitment by a project developer is addressed in Section 2.2.1 (Future Actions) of the EIS. This FEIS provides an updated version of Concept 3A which accounts for concerns as raised by the South Carolina State Ports Authority regarding the workability of the conceptual layout. The statement that Concept 3A would result in "less environmental impact" is in comparison with Development Concept 3 as developed by the BEST committee.

It should be noted that Concept 3B, included at the request of the City of North Charleston does not include a Cargo Terminal or Crossing of Shipyard Creek.

DOI 41 - By law, the Pryor Amendment requires that the Navy consider the community's approved Reuse Plan as the Proposed Action in the EIS (see Section 1.2 of the FEIS). This is the reason that the Navy has identified Alternative Reuse Scenario 3 (including Concepts 3, 3A, and 3B) as the preferred plan. The Navy does not intend to officially endorse a scenario, only to meet its obligation to prepare an EIS pursuant to NEPA.

DOI 42 - Comment noted. Figure 3-4 is intended to provide the reader with an orientation of the natural communities on the base. The focus of analysis of terrestrial resources on base is focused on the southern tip of the base. Section 3.2.1 has been updated to provide approximate acreages for the natural communities that occur on the base.

DOI 43 - Comment noted.

DOI 44 - Comment noted. See Comment ACE 1. The discussions of wetland resources and potential wetland impacts has been clarified in the FEIS to reflect recent input by the Corps of Engineers. See Table 2-7 and Sections 3.3 and 4.3 of the FEIS.

Figures 3-6 and 3-7 include in the Key E2EM as estuarine intertidal; should not this be estuarine, intertidal, emergent? What is the flooding regime of the one area delineated as E2EM on Figure 3-7?

The emergent wetlands bordering Shipyard Creek and the Cooper River on the undeveloped south end of the Base are delineated as estuarine, intertidal, emergent, irregularly flooded. The majority, if not all, of these wetlands are regularly flooded (twice daily tides) *Spartina* marsh (E2EM1N). These delineations should be corrected. Also, subtidal bottoms are classified as wetlands (E1UCB) and should be shown as such on figures 3-6 and 3-7; acreage should be included in tabular form along with acreage of other wetland habitats extant on the CNB.

Page 3-40: The statement that "The discharge of stormwater only has little bearing on the total assimilative capacity of the Cooper River" is unsupported and questionable. It also appears inconsistent with information provided on page 3-129 which states that there are 129 drainage basins on Base and 66 of those contain industrial activity. Further, 30 of 53 outfalls have been proposed for more extensive evaluation based on chemical oxygen demand concentrations, visual observation of illicit discharges (oily sheens, etc.), and the potential for illicit industrial discharges at outfalls where no dry weather flows occur. Also, the SCDHEC has stated that "Today, it's nonpoint source pollution (NP), which can come from many sources, that is posing the greatest threat to South Carolina's waters." In addition, while State officials have identified more than 300 waterbodies as NP pollution problem areas, the coastal waters of Charleston County were given priority by the SCDHEC (*The Newsletter*, Vol. 3, Issue 1, January 1992, SCDHEC).

No significant elevated levels of sediment contamination have been identified in the Cooper River, but this may be simply because no one has looked. There is reason to believe that potentially significant levels of contamination may be present within the sediments of the Cooper River in the vicinity of the CNB, regardless of the continuous cycle of sedimentation and subsequent dredging. Preliminary results of the Navy's stormwater discharge study indicate that wastewater is probably being discharged through the system as noted in the preceding paragraph and on pages 3-128 and 3-129 of this DEIS. Well-established industrial areas exist to the north and south of the CNB and currently are occupied by several large industrial companies (page 3-129). According to the DEIS (page 3-130), the Navy's recent property survey identified 12 CERCLA and Superfund Amendments and Reauthorization Act (SARA) Title III sites in the vicinity of the Base. Twenty-two hazardous material spills were identified within 0.25 mile of the Base. Twenty-four large quantity generators and four small quantity generators were identified within a 1-mile radius of the CNB. There are 22 FINDS sites, 34 Clean Air sites,

DOI 45 - Comment noted. See Comment ACE 1. The discussions of wetland resources and potential wetland impacts has been clarified in the FEIS to reflect recent input by the Corps of Engineers. See Table 2-7 and Sections 3.3 and 4.3 of the FEIS.

DOI 46 - The statement in question is from Section 3.4.2 (Water Quality) of the DEIS and is intended to address stormwater only. It is not intended to address industrial discharges, or be consistent with the discussion of industrial and miscellaneous discharges (See Section 3.13.11 of the FEIS). In fact, Section 3.4.2 draws a specific distinction between storm water and industrial discharges. Read in its full context, the DEIS states that "The discharge of storm water only has little bearing on the total assimilative capacity of the Cooper River. The uncertainty arising from the Naval Base discharge comes from the potential for nonidentified industrial sources being diverted into the storm water system, rather than being discharged to wastewater treatment facilities."

DOI 47 - Assessment of potential sediment contamination in the Cooper River was clarified based on the comment regarding the number, extent, and nature of potential contaminant sources at the base (see Section 3.4.3).

52 leaking Underground Storage Tanks (UST) sites, and 19 other UST sites also located within 1 mile of the Base. The Charleston Naval Shipyard itself was the 30th largest generator of hazardous waste in South Carolina in 1992 (SCDHEC) 1993. *Hazardous Waste Activities Reported in South Carolina for 1992*. Columbia, SC. 195 pp.).

A total of 177 SWMU and 198 Areas of Concern (AOC's) have been identified at the CNB (page 3-111). Several AOCs (#500, #501, #502, #503, #689, from Figure 3-17) and a number of SWMUs (#7, #8, #9, #13, #14, and #17, from Figure 3-17) are within, immediately adjacent to, or near the Cooper River and Shipyard Creek. Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Zone J includes all of the water bodies on Base; it also contains AOCs 500 through 502, 691 and 692. Data are not yet available identifying the nature and extent of contamination within this zone. However, previous investigations have documented elevated levels of arsenic in sediment and DDT, DDE, and PCBs in soil at SWMU #7; lead, PCBs, methylnaphthalene, naphthalene, pyrene, and phenanthrene in soils at SWMU #9; PCBs in water at SWMUs #7 and #8; arsenic in water at SWMU #7; and arsenic, mercury and lead in water at SWMU #9. The introduction of contaminated soils, groundwater, and surface waters from these areas is likely to have resulted in sediment contamination within the Cooper River and Shipyard Creek. As these areas currently represent a potential and continuous source of sediment contamination, it would appear more likely than unlikely that significant levels of contamination are present within the sediments of the Cooper River in the vicinity of the Base. Section 3.4.3, Sediment Quality, should be modified to reflect the information presented elsewhere in the DEIS.

Page 3-41: What is the existing groundwater quality relative to contamination? Please summarize all currently available data on groundwater quality in Section 3.4.4.

Pages 3-104 and 3-105: The current schedule of the RCRA Facility Investigation and the Risk Assessment, which are referenced as "being conducted", should be included in this section to give at least some general idea of the timeframe required to complete the RFI and a Corrective Measures Study as these activities will directly affect the Navy's disposal of surplus property at the CNB. Existing information regarding the nature and extent of contamination of the various media within each RFI Zone, SWMU, and AOC should be summarized in tabular form for presentation in this section in order to establish a basis for the analysis of impacts of the various alternatives as relates to existing site conditions.

Page 3-115: Do the existing RCRA and Hazardous and Solid Waste Amendments (HSWA) permits contain conditions that would have any impact on either the implementation or timeframe for

DOI 48 - Comment noted. See response to comment DOI-47.

DOI 49 - Groundwater contamination is being addressed in detail pursuant to ongoing RCRA and the Navy's IRP program related studies and site investigation. Since these investigations are ongoing, it is not possible to provide a detailed assessment of groundwater quality at the base. In general, groundwater quality at the base is consistent with the industrial use of the property. Groundwater quality will continue to be investigated and will be documented in other RCRA-related studies to be prepared by the Navy, EPA, and SCDHEC. These reports will be publically available for review and comment. Regardless of current groundwater quality, groundwater will be cleaned up pursuant to levels established by EPA and SCDHEC prior to property transfer.

DOI 50 - An updated schedule has been provided in Figure 1-4. Status of ongoing RFI activities are presented in the BRAC Cleanup Plan (BCP) which is updated periodically. Following the completion of the NEPA EIS process (e.g., the Record of Decision), the BCP will continue to provide the most up-to-date schedule for site cleanup.

Existing information regarding the nature of contamination within each RFI Zone, SWMU, and AOC is provided in Table E-1 and E-2 in Appendix E (Hazardous Sites and Substances Inventory).

DOI 51 - The RCRA and HSWA permits for the Base stipulate the schedule for performance of the RCRA Facility Investigation and the Corrective Measures Study. Specific conditions that would impact the implementation or timeframe of the proposed reuse scenarios are not contained in the Base's permits. Descriptions of potential impacts to reuse caused by implementing Corrective Measures are presented in Section 4.13 (Environmental Contamination) of the FEIS. The Naval Base is being remediated pursuant to RCRA; as such an evaluation of the Base under CERCLA is not warranted.

implementation of the proposed reuse scenarios? If so, please explain in this section. What would be the significance of EPA reevaluating the CNB under CERCLA and the Hazard Ranking System relative to the various reuse scenarios evaluated?

Page 3-121: Please explain in more detail the following statement and its implications to the proposed reuse scenarios: "Groundwater that is contaminated by Installation Restoration Program (IRP) sites that has commingled with UST wastes will be handled under the IRP program"

Page 3-130: We could find only three sites listed as CERCLA sites, only one of which is on the National Priorities List (NPL), and only four sites listed as a SARA III: Toxic Release Inventory Facility, one of which also is included in the three CERCLA sites, included in Appendix E, Table E-8. A CERCLIS ID Number is also given for one additional site. Please clarify what/where the referenced 12 CERCLA and SARA Title III sites are.

Pages 4-1 through 4-14, Section 4.1, Environmental Consequences and Mitigative Measures, Land Use and Aesthetics: Tables showing land use/vegetative cover affected by Alternatives 1 and 2 should be provided as they are for the PDP and the CDP. Also, a summary table of the total acres of each land use/vegetative cover type affected, including losses and gains, by each alternative is needed in order to conduct a comparative evaluation of the impacts of each alternative and to provide as much of a quantitative basis as possible for qualitative impact descriptions regarding such things as aesthetic resources.

Page 4-12: Until the nature and extent of contamination within Zones H, I, and J are known, it cannot be determined whether or not Alternative 2 would impact or be impacted by the contamination in the southern part of the CNB. Please provide the basis for the conclusion that Alternative 2 "would not impact or be impacted by the contamination in the southern part of the Base" or eliminate it.

Page 4-13: Visual, noise, and vibration impacts associated with PDP rail and road corridors and interchanges should be considered direct rather than indirect impacts.

Page 4-14 and 4-15: No one can ensure that land use conflicts due to site contamination would not occur until site investigations, including corrective measures studies and/or feasibility studies, are complete. Completion of these studies could possibly be well after this EIS process (disposal and reuse as they relate to decisions to be made by the Navy) and operational closure of the CNB are completed. This is the crux of the DOI's concerns about this EIS process (i.e., schedule). The document is not sufficient, based on environmental considerations, to select or support implementation of a particular alternative; yet, the Navy

DOI 52 - The statement has been clarified to read "Groundwater that has been contaminated by both Installation Restoration Program (IRP) Sites and UST wastes will be evaluated and remediated under the IRP program..."

DOI 53 - The sites as identified in the DEIS are located within .25 miles of the Naval Base. The text has been clarified in the FEIS.

DOI 54 - Evaluations of Alternative Reuse Scenarios 1 and 2 have been expanded throughout Section 4 (Environmental Consequences and Mitigative Measures). As noted in Section 1.2 (Description of the Proposed Action) of the FEIS, the Navy is required to consider the community's approved reuse plan as the preferred action under NEPA. Based on this requirement, a detailed comparative and quantitative analysis of each alternative scenario was determined not to be necessary for the DEIS. These sections have been expanded for the FEIS however.

DOI 55 - The original statement was intended to refer only to the location of the proposed waterfront commercial/industrial area. Text has been clarified in the FEIS.

DOI 56 - Comment noted.

DOI 57 - Pending the outcome of the Corrective Measures Studies, actual land use conflicts cannot be assessed in detail (e.g., spacial limits and duration of restrictions, nature of uses permissible, etc). However, the Navy and EPA have determined that, based on currently available information, only SWMU 9 and SWMU 14 will result in long term land use conflicts (see Section 4.13 of the FEIS and EPA comments received on the DEIS, dated December 9, 1994, included herein).

The DEIS is sufficient based on the conceptual nature of the Preferred Alternative Scenario 3 (including Development Concepts 3, 3A, and 3B). It is acknowledged that further detailed studies will need to be completed before specific components can be approved or implemented. Additional studies could include additional NEPA documentation if the responsible federal agency determines it is necessary. The Navy will prepare a Record of Decision regarding the Disposal and Reuse of the Naval Base property pursuant to the community's approved reuse plan as required by the Pryor Amendment. Since the Plan is conceptual, there is an inherent ability to modify components of the plan to account for specific conditions and publicly endorsed goals and objectives in place at the time of implementation. See Section 2.2.1 (Future Actions) of this FEIS.

will prepare a Record of Decision regarding disposal and reuse based upon this document. A decision to transfer the entirety of the Base to the Redevelopment Authority would "lock in" to a certain extent the PDP or the CDP, regardless of the findings of CERCLA/RCRA investigations. Yet, restrictions on the Navy relative to deed transfer of contaminated property could prevent the implementation of the PDP or the CDP. Information contained in the paragraph "Coordination of Developments with Ongoing Contamination Investigation" should be expanded and incorporated into a separate section in the FEIS as discussed earlier.

Pages 4-15 and 4-16: Impacts of the preferred development on existing vegetation should be provided in tabular form showing clearly how existing vegetation would be impacted. Text should reflect how the areas would be affected as shown in the table, rather than simply stating they "would be impacted."

Page 4-16 and 4-19: Elimination of almost all natural areas on the Base would result in more than "moderate" impacts to habitat and associated wildlife. These impacts should be identified as significant.

Please explain the "exception" in the statement that the PDP/CDP "would eliminate almost all natural areas on the base with the exception of the adjacent tidal marshes and tidal flats." The acreage of tidal marshes and tidal flats that would remain unaffected and the acreage that would be destroyed or shaded by structures planned by the PDP and CDP should be identified. Acreage data are needed to support the statement that the PDP "would essentially leave the marsh area bordering the southern end of the Base unchanged."

The displacement of 23 nesting pairs of least terns may not be significant relative to the entire State population, but it would be a significant local impact. Please so indicate.

Page 4-20: Availability of wading bird rookery habitat in the Charleston Harbor estuary is extremely limited. Elimination of any such existing habitat may be considered significant at this time and mitigation for any such loss should be provided.

Filling 82 acres of Cooper River intertidal and subtidal habitats would be considered significant, even though the area may already be "heavily impacted". Further, questions regarding the significance of these aquatic areas to anadromous fishes, including the endangered shortnose sturgeon, have yet to be addressed. Please so note.

It is important to note that adequate data are not yet available regarding the PDP or the CDP to make a determination of effects on endangered and threatened species. Language regarding Section 7

DOI 58 - Comment noted. Acreages as provided in the text of the DEIS are approximate due to the conceptual nature of the Reuse plan. See Table 4-1 and 4-2 for the acreage of vegetative cover impacted by Development Concepts 3, 3A, and 3B.

DOI 59 - These impacts are considered moderate due to the extensive and recent disturbances to nearly all of the Base, including those areas identified as "natural areas". The "natural areas" on the Base are not pristine undisturbed areas, but are considered natural areas in a relative sense given the extent of urban development in the immediate vicinity. It should also be noted that much of the "natural areas" at the Base are found along Shipyard Creek and in the southern portion of the property near the marina, and that these areas are designated for open space/buffer use and are not proposed for development.

DOI 60 - The statement in question refers to the BEST Plan only. Section 4.2.1.1 addresses impacts to existing vegetation and wildlife from Development Concept 3A. The "exception" referred to indicates that the BEST Plan (referred to as Development Concept 3) will impact most of the naturally occurring vegetation "not including" tidal marshes and tidal flats. As indicated in Figure 4-2 of this FEIS, all tidal marshes and tidal flats along Shipyard Creek and the Cooper River will remain unaffected. This is also the case for Development Concepts 3A and 3B.

DOI 61 - Comment noted.

DOI 62 - Comment noted. While Alternative Reuse Scenario 3 would impact this potential wading bird colony, the attempted resettlement and subsequent abandonment of the area following Hurricane Hugo indicates that its quality has been diminished. Nonetheless, it is considered a locally important habitat and merits consideration as such. It should be noted, that both Development Concepts 3A and 3B propose a conceptual layout which would avoid this area.

DOI 63 - As noted in Section 3.2.3 (Threatened and Endangered Species) of the DEIS, various transient marine species are known to use the Charleston Harbor, including the shortnosed sturgeon. As also noted, however, "these species are infrequent visitors to the Cooper River, and none have potential breeding habitat near the Base". It should also be noted that the method of cargo terminal construction has not been determined, but that it would likely not be conducted via filling.

DOI 64 - Comment noted. Section 4.2 has been updated to identify the need for Section 7 consultation once a definitive project has been developed.

consultation requirements of the Endangered Species Act should be added.

Modify the statement that the CDP "would result in less impacts to wildlife resources in the southern portion of the Base" by adding "when compared to the PDP." It would result in considerably greater impacts than Alternatives 1 or 2.

Page 4-22: The cumulative impact to the Charleston Harbor area of the loss of all natural areas on the approximately 1575-acre CNB should not be referred to as insignificant. Occurrence of "Undeveloped lands" across the Cooper River, particularly Clouter Island which is a diked spoil disposal area and Daniel Island which is to be extensively developed for residential and commercial purposes, cannot be considered mitigation for this loss. Cumulatively, the fish and wildlife resource losses associated with the PDP are likely to be significant in the rapidly-developing Charleston Harbor area.

Page 4-23: Refer to the earlier comment regarding the significance of demolition of structures at the CNB with identified least tern colonies.

Offsite mitigation should be considered for natural resource losses that cannot be adequately mitigated onsite.

Page 4-24 and 4-25: Impacts of the PDP on wetlands cannot be adequately determined until the wetlands are correctly delineated and acreage determined. Please refer to our earlier comments under Section 3 as well as to comments on Table 2-5.

Filling 82 acres of intertidal/subtidal areas of the Cooper River or placing pile-supported structures in 130 acres of the River may significantly impact local flood levels. Site-specific modeling is necessary to make this determination.

Page 4-26: Please correct the discussion of the potential use of a nationwide permit for the CDP per information provided by the COE at the November 28, 1994, meeting and earlier in these comments.

Page 4-29: A more appropriate and accurate statement of the wetland impacts of Alternatives 1 and 2 would be that these alternatives would have no significant adverse impacts and could in fact result in positive impacts.

Again, there is currently no basis to conclude that implementation of the PDP would have minor impacts to estuarine wetlands. Similarly, there is no basis for a determination that on a regional level, the loss of 77.5 acres of wetlands "would be insignificant."

DOI 65 - Comment noted. Text has been revised.

DOI 66 - See Comment DOI 59. Section 4.2.4 (cumulative impacts) accurately notes that the loss of vegetation and associated habitat at the Base would be considered a significant loss locally and on the west side of the Cooper River in the vicinity of North Charleston, but not when considering the entire Charleston Harbor. The "natural areas" which would be impacted at the Base are already disturbed, influenced by encroached development and not of the quality which would be regionally significant.

DOI 67 - Comment noted.

DOI 68 - Sections 3.3 and 4.3 of this FEIS have been revised to incorporate updated information regarding wetland resources on the Base. See comment ACE-1.

DOI 69 - Comment noted. It is acknowledged that specific modeling of the Cooper River needs to be completed to support the detailed engineering and design studies for the proposed cargo terminal.

DOI 70 - Comment noted. See the revised Section 4.3 (Wetlands and Floodplains) of this FEIS.

DOI 71 - Although the potential for wetland enhancement under Alternative Scenarios 1 and 2 is noted in Section 4.3.2 and 4.3.3 of the DEIS, these sections have been modified to include a more definitive statement in this regard. The FEIS includes a revised discussion of Wetland impacts based on recent input from the Corps of Engineers. See comment ACE-1.

Page 4-30: Why would an OCRM mitigation plan be required only for impacted "federally defined jurisdictional freshwater wetlands"? Does not OCRM have State jurisdiction over estuarine wetlands in the coastal zone?

Would the removal of the shell/gravel drive which rings the southern portion of the base as a means of mitigating wetland losses at the CNB be consistent with the PDP or the CDP?

Page 4-31: As stated previously, the actual impact of the PDP on local hydrology cannot be determined with the currently available data.

Page 4-32: While we accept that eliminating existing illicit industrial discharges through the stormwater system would have the potential to improve water quality within the waterbodies surrounding the CNB, it is the cessation of all Navy activities on Base that would eliminate these discharges, not the PDP or any other currently proposed reuse plan. Please revise the document to clarify that this "potential to improve water quality" is applicable to all alternatives, not just the PDP. Also, implementation of any reuse plan would require appropriate permitting of wastewater and stormwater discharges consistent with existing regulations. The projected use of the facilities provided by both the PDP and CDP includes 3,014 ships per year and 12 trains per week. This activity has the potential to substantially degrade local water quality.

Page 4-33: Please refer to earlier comments regarding projection of future dredging needs under both the PDP and the CDP and how those might relate to each other and to existing dredging requirements.

Page 4-34: Implementation of the PDP certainly has the potential to result in significant cumulative impacts to water quality in the project (see earlier comments). That there are no other projects being proposed which will involve filling the Cooper River or otherwise affecting its hydrology does not mean, or even imply, that implementation of the PDP would not have cumulative impacts on water quality or hydrology. This sentence has no meaning relative to cumulative impacts and should be eliminated.

What is the basis for the conclusion that construction/operation of the Cargo Terminal would not increase the potential for fuel spills, since 3,014 ships per year would be serviced?

The statement that the PDP "proposes building the Marine Cargo Terminal on piling, rather than building a bulkhead and filling behind it" needs clarification. If this is the case, this EIS needs extensive revision to reflect the use of pilings rather than a bulkhead with backfill.

DOI 72 - Comment noted. See comment received from SCDHEC Office of Coastal Resources Management (OCRM), dated December 12, 1994, for additional information regarding OCRM jurisdiction over wetland resources. See also Section 2.2.1 (Future Actions) of this FEIS.

The removal of the shell/gravel road as a means of wetland mitigation would be consistent with both Development Concepts 3A and 3B.

DOI 73 - Comment noted. See Sections 3.4 and 4.4 of this FEIS.

DOI 74 - Comment noted. See Section 4.3 (Water Quality and Hydrology) of this FEIS. The "potential to improve water quality" due to the cessation of Navy activities is noted for each alternative. Permitting of discharges is addressed in Section 2.2.1 Future Actions of this FEIS.

Regarding Alternative Reuse Scenario 3's "potential to substantially degrade local water quality," although the ship traffic will be significantly increased over current Navy levels, it should be noted that no refueling of vessels would be done at the cargo terminal. This would virtually eliminate the potential for fuel spills. Nonetheless, the increase in ship traffic could affect water quality.

DOI 75 - See responses to comments DOI-18 and DOI-32.

DOI 76 - Cumulative impacts refer to impacts of the proposed action in addition to, or combined with similar impacts from separate and unrelated actions which may individually be insignificant, but which combined may result in significant environmental impacts. Since there are no other projects in the area which involved construction in, or filling of the Cooper River (Gore 1994), no cumulative impacts due to proposed construction in the Cooper River were identified.

DOI 77 - According to the State Ports Authority, this type of cargo terminal at this location would likely not include refueling facilities. Since ship refueling, which currently takes place at the Base, would be discontinued, the conclusion is accurate.

DOI 78 - The method of construction of the proposed cargo terminal will be determined by the developer of the Cargo Terminal following detailed engineering and design studies. While the Navy does not intend to specify how the terminal should be constructed (e.g., piling or bulkheading and filling), the DEIS does note the engineering and regulatory constraints to the bulkheading option. Development Concept 3 (and Concept 3A) also proposes construction on pilings. Based on discussions from OCRM and SCDNR, this would seem to be the more preferable option in terms of environmental impact. See Section 2.2.1 (Future Actions) of this FEIS.

The need for additional NEPA documentation regarding the construction of this cargo terminal would be determined by the Army Corps of Engineers during their Section 10 permit review. (See Section 2.2.1 of this FEIS).

Are data available to support the statement that building the terminal on pilings would not significantly alter the river's hydrology from existing conditions?

Pages 4-36 through 4-47, Air Quality: Tables 4-4 through 4-9 should include data on existing source emissions in order to display the impacts of the alternatives. Also, this section needs a tabular display summarizing the major air quality impacts associated with each alternative.

Page 4-54: The assessment of cumulative noise impacts associated with the PDP as indicated on this page--i.e., increased capacity of the shipyard and contained operation of nearby industrial operations could result in higher ambient noise levels--is not reflected in Table 2-5.

Page 4-63: What are the alternatives to the proposed crossing of Shipyard Creek? If there are alternatives, why are they not addressed in this DEIS, as the proposed crossing could have a significant adverse effect on sensitive environments, public navigation, and the Charleston Harbor Federal Navigation Project?

Page 4-85: Does the referenced 750 acres of revenue-producing land that would result from implementation of Alternative 1 include the property that would be auctioned by the Navy under this alternative? If so, what types of land uses were projected for these lands to be auctioned?

Please clarify the following statement:

"Although this alternative provided the second lowest total area for active recreation use focuses on immediate reuse of recreational facilities by calling for minimal reconfiguration, relocation, and reconstruction of existing facilities."

In addition, the statement that Alternative 1 provides the second lowest total area for active recreation is not supported by the information in tables 2-1 through 2-4. Based on acreage provided in these tables, Alternative 1 would provide the greatest amount of land, 250 acres, for "active recreation"; Alternative 2 would provide 175 acres for active recreation, while the PDP and CDP would provide only 95 acres for active recreation, including the off-Base Chicora Tank Farm--it is not clear whether this 27 acres is included in Alternatives 1 and 2 active recreation categories or not. Using acreage from the one category of "active recreation" in the discussion of Alternative 1 impacts versus the acreage for recreation and open space for the PDP (page 4-80) leaves the impression that Alternative 1 provides only 250 acres for "local community recreational use" while the PDP provides almost 30%, 420 acres, of the CNB for this use. From Table 2-1, Alternative 1 would provide 650 acres in active recreation/open

DOI 79 - Data on existing source emissions is provide in Section 3.6 (Air Quality) of the FEIS. The FEIS also includes an updated discussion of existing air quality including emissions data for Navy ships not previously available. Since the Navy is required to consider the community's approved plan as the proposed action in the EIS, detailed air emissions projections and estimates were provided for Alternative Reuse Scenario 3 including Concepts 3, 3A, and 3B. Using these results, emissions estimates were made for each of the Alternative Reuse Scenarios, and are presented in Tables 4-8 and 4-9. However, a new table (Table 4-10) has been prepared to summarize air pollutant emissions for the existing condition and all alternatives to clarify the final conclusions.

DOI 80 - Comment noted. See Table 2-7 of the FEIS.

DOI 81 - No alternatives for crossing Shipyard Creek were identified by the BEST Committee. It should be stressed that the route identified by Development Concepts 3 and 3A is intended as a conceptual alignment, and is not intended to identify or endorse a specific route. As noted in the DEIS, the final alignment will be based on detailed planning and engineering studies to be conducted by the developer of the Cargo Terminal, and will be subject to the review and approval of EPA, SCDHEC, OCRM and the Corps of Engineers. The developer of the Cargo Terminal will be responsible for identifying and evaluating potential alternative crossing locations and designs. See also Section 2.2.1 (Future Actions) of this FEIS.

DOI 82 - The 750 acres noted does include the land that the Navy would offer for public sale. The types of land use identified for lands which would be offered for public sale by the Navy are identified in Section 2.3.1 of the DEIS.

DOI 83 - The text of the FEIS has been corrected.

DOI 84 - Comment noted. The discussion of recreational acreage in the proposed scenarios has been clarified.

space/stormwater management compared to 314 acres (again, including the 27-acre Chicora Tank Farm) for these uses under the PDP. Such invalid comparisons confuse comparison of alternatives and should be eliminated from the document.

Table 2-2 lists Alternative 2 as resulting in 175 acres of active recreation lands and 375 acres of open space/stormwater management lands. From where is the referenced 660 acres for recreation and open space uses derived?

Page 4-82: The impacts of environmental contamination on implementation of the PDP should be discussed in greater detail, including a discussion of how federal/state laws and regulations regarding deed transfer of contaminated property could significantly affect the implementation of the PDP or other reuse alternatives. As the properties must be determined to have been adequately cleaned-up before deed transfer, it could be years before deed transfer of portions of the CNB could occur.

Page 4-90: The fact that specific impacts on implementation of the PDP will be addressed after the RFI field work conducted as part of the corrective measures study is why the FEIS needs to specify that additional NEPA documentation will be necessary.

RFI activities and remediation must be complete at SWMU 7 prior to deed transfer of the property. The implication of the sentence stating that remediation "will most likely be complete at SWMU 7 prior to complete build out of the terminal (15 to 20 years)" is that the SPA and other public agencies and private interests would invest as much as \$967 million in capital improvements to implement the PDP before obtaining ownership of the property. Is this the intended purpose of this sentence? If not, please clarify the statement relative to site remediation requirements and property transfer.

Page 4-93: Please explain the ongoing RFI activities at the Northern tip of the property, findings of investigations, and status of corrective measures which "should accommodate the development schedule without impact."

Page 4-94: Please provide basis for determinations the environmental contamination would not impact development of the Cultural Park, Office District, Community Support/Housing, and Marine Industrial District (page 4-95) portions of the PDP.

Is there any estimate of the possible length of delay associated with conversion of the Chicora Tank Farm into athletic fields due to contamination?

Page 4-96: What is the basis for the determination that implementation of the PDP "would result in a long-term positive environmental impact on the base property and facilities"? Please

DOI 85 - 660 acres was included in the Reuse Plan. Upon additional analysis, which included the projected uses for areas for which BEST previously did not project uses, the total for recreational lands and open space for Alternative Reuse Scenario 2 is 720 acres, including 200 acres active recreation, 200 acres passive recreation, 150 acres open space, and a 170 acre cultural park. Table 2-2 has been clarified.

DOI 86 - The FEIS provides an adequate discussion of the effects of environmental contamination on implementation of Alternative Reuse Scenario 3 given the information available as of the date of the FEIS and the uncertainty regarding specific redevelopment proposals and components of the conceptual reuse plan. In fact, the primary factor in development of Development Concept 3A was site contamination and the impact it may have on implementing specific components of Alternative 3 as identified by the BEST committee. The comment accurately states that property must be determined to have been adequately cleaned up prior to deed transfer.

DOI 87 - Comment noted. See comment DOI 4. See also Section 2.2.1 (Future Actions) of this FEIS.

DOI 88 - Comment noted. The statement has been clarified.

DOI 89 - The RCRA Facility Investigation at the Northern part of the base includes only 9 investigative sites and is scheduled to complete the investigation by April 1996. A Corrective Measures Study to determine the requirement for remediation and the extent of remediation will complete by April 1997. Remediation will begin by June 1997. The complete build out of the Marine Cargo Terminal is a phased approach which is anticipated to take from 25 to 30 years. The investigation and resulting remedial actions should not be a significant impact to this alternative.

DOI 90 - Based on a review of information currently available, and on discussions with Navy, EPA, and SCDHEC personnel, it was determined that none of the SWMUs and AOCs located in the area of the proposed cultural park, office district, community support/housing, and marine industrial area would require long term remedial action. If the ongoing RCRA Facility Investigation and Corrective Measures Study indicate that this determination is incorrect, it will be revised accordingly. The statement is also based on the premise that redevelopment in these areas would not result in substantial ground disturbances, but would rather entail use of existing buildings and structures. See Comment EPA 4.

Pending the conclusion of the Corrective Measures Study, there is no estimate of the possible length of time associated with the remediation of the Chicora Tank Farm.

DOI 91 - Consistent with the intent of Section 4.13 (Environmental Contamination), the statement refers to impacts associated with environmental contamination. The statement in question infers that the cleanup of the Naval Base property, which must occur prior to the transfer of title from the Navy to another entity, will result in long-term positive environmental impact on the property and facilities. While the Navy would proceed with cleanup of the site under any of the reuse scenarios, the commitment of the Redevelopment Authority to implement Alternative Reuse Scenario 3 (including Development Concepts 3, 3A, and 3B), is ensuring that the cleanup of the Base proceeds as quickly as possible.

Impacts to wetlands, "open water", loss of "natural areas", wildlife resources, and "habitat losses" are addressed elsewhere in Section 4 of this FEIS.

clarify this statement with the projected environmental impacts of the loss of at least 77.5 acres of wetland, the loss of about 80 acres of open water, the loss of almost all natural areas on the 1575-acre CNB, reduced wildlife populations due to habitat losses, and the cumulative effects of these losses in a rapidly developing coastal area, etc.

The accelerated program addressing contaminated areas on the CNB has occurred as a result of the BRAC decision to close the Base, not as a result of the PDP. It should be clearly stated that the impact of an accelerated investigation of site contamination and hopefully of site remediation is not restricted to the PDP.

The remainder of the discussion under Section 4.13.4, Environmental Contamination, Cumulative Impacts, pointing out CERCLA restrictions on deeds for federal transfer of previously-contaminated properties is misplaced. The discussion is essential to the DEIS, but is in fact an assessment of the impacts of CERCLA and site contamination on the PDP rather than of the impacts of the PDP on site contamination. This discussion would be most appropriate under the recommended new section dealing with obstacles to implementation of the PDP as well as to the other identified alternatives.

Pages 4-99 and 4-100: Again, the information presented under this section, 4.13.5, Environmental Contamination, Mitigation Measures, is appropriate for this DEIS but seems misplaced. This is a discussion of how the Navy is currently "mitigating" environmental contamination at the CNB and how that contamination and its mitigation may affect the reuse proposals--only the establishment of the order of RFI zone priority is an impact of the PDP and this is not a "mitigation measure" per se.

Page 4-100: It is stated that cleanup of contaminated areas may delay or complicate specific elements of the Base reuse plan but that these delays should not be significant given the 20- 30-year implementation schedule for CNB reuse. This statement seems to ignore the fact that remediation efforts frequently last this length of time or greater, in particular when groundwater contamination is present. While a property transfer could occur prior to completion of remediation (i.e., once the remedial plan has been completed and the remedy demonstrated to be operating properly and successfully; Page 4-96), a considerable amount of time may be necessary to reach this point. We are unaware of any currently available data to support the projection that delays in implementing specific elements of the reuse plan "should not be significant."

Page 5-1: What is the "proposed action," the PDP or the CDP?

Page 5-2: The South Carolina Hazardous Waste Management Act should be included in this list.

DOI 92 - Comment noted. See comment DOI 91.

DOI 93 - Comment noted. This is mentioned in the Executive Summary of the DEIS (see the subsection on "Significant Impacts and Areas of Controversy"), and is addressed in greater detail in Section 2.2.1 (Future Actions) of this FEIS.

DOI 94 - Comment noted. See Section 2.2.1 (Future Actions) of the FEIS.

DOI 95 - This determination was made after consultation with the Navy, EPA, and SCDHEC, which are jointly overseeing the investigation and subsequent remediation of the property. Refer to EPA comment letter dated December 9, 1994 as included herein (comments EPA 4 to EPA 6). Based on the conclusions of the Corrective Measures Study, the extent of delays in implementing specific components of the reuse plan will be available.

DOI 96 - As noted in Section 1.2 (Description of the Proposed Action), the proposed action is disposal of the Charleston Naval Base and redevelopment of the Base pursuant to the community's approved Reuse Plan. As such, Alternative Reuse Scenario 3 is the Proposed action; however, Development Concepts 3, 3A, and 3B have been included in order to provide the local community with the flexibility necessary to implement the plan given the current uncertainties regarding redevelopment in the areas of SWMU 9 and SWMU 14. These options also provide the Redevelopment Authority and the Community the opportunity and flexibility to avoid other potential impacts to wetlands and sensitive habitats and to provide additional open space resources.

DOI 97 - Comment noted. The South Carolina Hazardous Waste Management Act has been included.

Page 5-1: "In compliance with the Clean Water Act and Executive Order 11990, development in wetland areas have been avoided." Please explain the basis for this statement, since both the PDP and the CDP would involve construction in wetlands and consequently wetlands losses.

Section 7 of the Endangered Species requires the federal agency proposing the action to determine whether the proposed action may affect federally protected species or critical habitat. No such determination has been provided in this DEIS. As there is potential habitat for federally protected species in and immediately adjacent to the CNB but the DEIS provides no analysis of the "effects of the action," (as defined by 50 CFR 402.02) on federally protected species, we are unable to concur that the proposed action is not likely to adversely impact such species. You should contact the U. S. Fish and Wildlife Service, Charleston Field Office, regarding further Section 7 consultation requirements. When requesting further consultation, please refer to the log number assigned when this office responded to the earlier request concerning the presence of protected species. See Attachment 1 for a listing of the information needed for Section 7 consultations.

Page 5-4: The PDP proposes filling 82 acres of the Cooper River, thus converting it from its existing intertidal and open water uses to upland and destroying all natural resources associated with it. The CDP proposes the same facilities be built on pilings, which would also convert the intertidal and open water areas; the degree of habitat degradation and loss along with any accompanying loss of fish and wildlife has yet to be quantified.

What "bulkhead" is referred to in the third sentence of the first full paragraph? Would construction of this bulkhead be consistent with the State Coastal Zone Management Program? Upon what do you base the determination that since the Cargo Terminal would not be located closer than 150 feet from the maintained channel, the PDP would not have impacts to channel maintenance?

Page 5-9: Please correct issue of project approval under a COE nationwide permit.

Page 5-10: The RFI has not yet progressed sufficiently to provide adequate public information relating to human health or the environment relative to environmental contamination at the CNB. While there has been considerable opportunity for public awareness of ongoing activities relative to the reuse of the CNB, additional public meetings and other means of ensuring public access to information regarding the nature and extent of contamination at the CNB and the human health and environmental risks associated with that contamination will be needed as the information becomes available.

DOI 98 - This statement has been revised to reflect the updated discussion of wetland resources at the Base (See Sections 3.3 and 4.3).

DOI 99 - Comment noted. Section 4.2 has been updated to identify the need for Section 7 consultation once a definitive project has been developed.

DOI 100 - It should be noted that pending the outcome of detailed engineering and design studies to be conducted by the developer of the Cargo Terminal, the actual method of construction of the cargo terminal is not known. However, for the purposes of projecting potential environmental impacts, it has been assumed that Development Concepts 3 and 3A propose that the cargo terminal be constructed on pilings rather than bulkheading and filling. Concept 3B does not include a Cargo Terminal.

The third sentence of the first full paragraph refers to the existing bulkhead. The text has been revised accordingly.

The statement that the cargo terminal would not affect the maintained channel is based on the observation that several of the existing piers are within the same distance and do not affect channel maintenance. If, following detailed engineering and design at the terminal facility with regard to channel maintenance, hydrologic modeling indicates a potential problem, the issue would be addressed in the Section 10 permit to be issued by the Corps of Engineers.

DOI 101 - Comment noted. See Section 4.3 (Wetlands and Floodplains) and Section 2.2.1 (Future Actions) of this FEIS.

DOI 102 - Comment noted.

Pages 7-1 and 7-2: How would the proposed action affect the long-term biological productivity of the Cooper River and the Charleston Harbor estuary?

Page 8-1: The PDP/CDP would result in the irreversible and irretrievable loss/degradation of up to 77.5 acres of wetlands (a value which does not include any regularly-flooded, intertidal wetlands) and up to 130 acres of Cooper River open water habitat and associated fish and wildlife species dependent on these habitats.

Page 9-1: Please qualify the statement regarding reuse of construction and demolition wastes "as fill material where needed." As a natural resource trustee with responsibility for wetlands, we become concerned when someone proposes to recycle/reuse wastes "as fill material" in an area with extensive wetlands.

DOI 103 - Due to the continued dredging operations undertaken by the Navy to assure that their berthing piers maintain necessary depths, little opportunity exists for a diverse benthic community to develop. Although a diverse community cannot develop, the substrate adjacent to the base can host a variety of benthic organisms. Therefore, the potential does exist for this area to provide sporadic forage habitat for migratory marine species. However, the implementation of the proposed action could in fact increase the productivity of the entire Charleston estuary. As noted in the comments received by the National Marine Fisheries Service (NMFS-3), it is important to note that the construction of a pile-supported cargo terminal would provide suitable attachment sites for benthic organisms that play beneficial roles in the estuarine environment.

DOI 104 - Comment noted. Section 8 (Irreversible and Irretrievable Commitment of Resources) has been revised.

DOI 105 - The Reuse Plan proposes that the cargo terminal be constructed to an elevation of 10 to 12 feet above MSL (see Section 4.5.1 Topography, Geology, and Soils). This would put it above flood elevation and would facilitate movement of goods to and from ships. Considerable amounts of fill material will be needed. Note that Development Concept 3B does not include a Cargo Terminal Facility.

Attachment 1
SECTION 7 CONSULTATIONS

Please include the following items when initiating consultations under Section 7 of The Endangered Species Act with the Fish and Wildlife Service Charleston Field Office. In subsequent correspondence please reference the Fish and Wildlife Service Log Number assigned to the project.

1. A description of the proposed action. Include type of federal action involved (e.g., Federal permit or authorization, Federal funding, etc.).
2. Project location including county, nearby town or city, and maps indicating precise location (e.g., United States Geological Survey quadrangle map, soil survey map, National Wetlands Inventory map, plat, etc.) and general location within the state (e.g., highway map, etc.). Indicate the limits of the project on the location map. Include acreage or other measure of the area(s) to be impacted.
3. A description of the specific area that may be affected by the proposed action. Typical descriptions include, but are not limited to, habitat types (e.g., agricultural field, pine forest, bottomland hardwoods, scrub-shrub wetlands, upland hardwoods, open water, etc.), present condition of the habitat type (e.g., cutover, early successional, mature, old growth, etc.), soil classification, and a photograph, if available, of each habitat type where impacts will occur.
4. A description of the habitat requirements of any listed species that may be affected by the proposed action and the manner in which each species will be affected. County distribution records can be obtained from the U.S. Fish and Wildlife Service, P.O. Box 12559, Charleston, SC 29422-2559.
5. An analysis of the "effects of the action", as defined by 50 CFR 402.02, on any listed species including consideration of direct, indirect, and cumulative effects. Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur. Cumulative effects are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action are of the Federal action subject to consultation.
6. Summary of evaluation criteria used as a measurement of potential effects.
7. Determination of effect based on evaluation criteria.

H-35



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET NE
ATLANTA GEORGIA 30365

DEC 09 1994

4PM-FA/mh

Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, SC 29419-9010
ATTN: William Sloger

SUBJECT: Draft Environmental Impact Statement (DEIS) on Disposal
and Reuse of the Charleston Naval Base, North
Charleston, South Carolina

Dear Sir:

We have reviewed the subject document in accordance with Section 102(2)(C) of the National Environmental Policy Act and Section 309 of the Clean Air Act. The DEIS addresses the No-Action Alternative, three Alternative Reuse Scenarios, as well as a "Contingent" Reuse Plan. This contingency plan (Scenario 3A) is a variation of the Preferred Development Plan (Scenario 3) adopted by the Building Economic Solutions Together (BEST) Committee and the Charleston Naval Complex Redevelopment Authority. We offer the following general comments, with detailed comments enclosed as Attachment A.

EPA concurs with the need for a Contingent Development Plan such as Reuse Scenario 3A. We prefer avoidance of contaminated areas, wetlands, and buffer areas as proposed in the Contingent Development Plan. We note that the 77.5 acre wetland loss as proposed in the Preferred Development Plan represents a significant direct and cumulative environmental impact.

Conversely, we also note, as the DEIS does on page 4-12, that implementation of the Preferred Development Plan may preclude development of a similar facility by the South Carolina State Ports Authority on Daniel Island. We concur that, as stated, "Development of this facility at the Base would avoid cumulative land use" (and we add environmental) "impacts resulting from development of an industrial use on an undeveloped site."

The DEIS is significantly above average in its overall discussion and illustration of the existing environmental conditions and the ecological impacts of the Preferred Development Plan. We have several concerns--outlined in detail

EPA 1 - Comment noted. Following consultation with the Army Corps of Engineers, this potential impact has been refined to 20.5 acres of wetlands.

EPA 2 - Comment noted

on Attachment A--about the impacts of and proposed mitigation for this Plan. Impacts of most concern include (numbers in parentheses refer to the comment number from Attachment A):

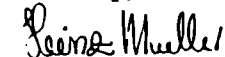
- development in contaminated areas (#2), wetlands (#17), and buffer areas;
- the proposed minimal clean-up goals for residual contamination (#4);
- noise and community impacts due to the proposed new transportation corridor from Interstate-26 to the Base (#6);
- air quality impacts due to traffic improvements (#7), mobile emissions (#19), and asbestos removal (#28);
- identification of General Radioactive Material (#13);
- contamination on neighboring properties (#8);
- transfer of property involving environmental permits (#15);
- environmental liability associated with the existing wastewater collection system (#21);
- preservation of cultural resources (#22); and
- elimination of Least Tern nesting sites (#32).

Other issues that should be addressed in the Final EIS are:

- A more intensive evaluation of the functional values of the potentially impacted freshwater wetlands should be provided. We also strongly recommend that a meaningful mitigation plan be included in the Final EIS (#16).
- The Draft EIS excludes the non-contiguous properties of the Charleston Naval Complex. We recommend that the Final EIS include all of these properties (#3).

We rate this DEIS "EC-2." That is, we have Environmental Concerns about the project and more information is needed to fully assess the impacts. A description of EPA's rating system is attached (Attachment B). If you have any questions concerning our comments, please contact Marion Hopkins at 404/347-3776.

Sincerely,



Heinz J. Mueller, Chief
Environmental Policy Section

Attachments

EPA 3 - Each of these comments is responded to herein as comments EPA 4 through EPA 43 for the specific responses.

cc: Doyle Brittain, BRAC Environmental Coordinator, EPA Region IV
Haynes Johnson, Wetlands Regulatory Unit, EPA Region IV
Richard Button, Office of Radiation, EPA Region IV
Alan Powell, Mobile Source Planning Unit, EPA Region IV

Captain James Augustin, Base Closure Office, Charleston Naval
Base

ATTACHMENT A

DETAILED COMMENTS ON THE
DEIS ON DISPOSAL AND REUSE OF THE
CHARLESTON NAVAL BASE
December 9, 1994

1. Comments provided below address issues the first time that they arise within the DEIS and although EPA intends that the comments apply each time the issue arises, they are not repeated. Note that the acronym "EPA" and "USEPA" both refer to the United States Environmental Protection Agency.
2. Page viii, Executive Summary.

- a. EPA concurs with the need for a Contingent Development Plan such as Reuse Scenario 3A. Contaminated areas have been identified at the Base. These contaminated areas have been identified in the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA); RFA reports are currently being finalized and should be available to the public soon. The nature and extent of contamination for all contaminated areas are being investigated (i.e., sampling and analysis) in the RCRA Facility Investigation (RFI); the RFI is currently underway. Various cleanup alternatives will be evaluated on a site-specific basis during the Corrective Measures Study (CMS); the CMS will begin upon completion of the RFI. The actual cleanup method selected for each contaminated area will be based on the results of the CMS.

Based on all currently available information and pending the results of the RFI and CMS, EPA believes that the size and nature of all but two of the contaminated areas will readily lend themselves to cleanup so there would be little or no restriction on the property for reuse, e.g., cleanup for industrial or residential reuse. However, the old landfill and the chemical disposal area [Solid Waste Management Units (SWMUs) 9 and 14 respectively] are not the types of areas which readily lend themselves to cleanup; rather they are the types of areas which typically are stabilized to pose no threat to human health or the environment and left in place.

The Preferred Development Plan, Reuse Scenario 3, assumes environmental cleanup to allow unrestricted use of the Base. EPA believes that a Contingent Development Plan, such as Reuse Scenario 3A, is necessary because of the potential that the RFI and CMS might reveal that contaminated areas, such as SWMUs 9 and 14, might not lend themselves to a level of cleanup

EPA 4 - As is noted in the DEIS, the RCRA Facility Assessment is currently being conducted and is not yet available for distribution. The DEIS also acknowledges that the actual cleanup method for each contaminated area will be based on the results of the Corrective Measures Study.

The comment on SWMU 9 and 14 is noted, and has been accounted for in Development Concepts 3A and Plan 3B.

EPA 5 - Comment noted. The DEIS is also consistent with EPA's statement that SWMU 9 and SWMU 14 may not be able to support unrestricted use, and will likely require long-term restrictions on reuse/redevelopment of these areas. It is primarily due to this factor that the DEIS proposes Concept 3A as part of the Preferred Alternative Scenario.

to justify unrestricted use of the Base. In fact, significant, long-term restrictions might be imposed on the reuse of properties such as SWMUs 9 and 14.

- b. EPA suggests that caution be exercised in interpreting Reuse Scenarios 3 and 3A. Reuse Scenarios 3 and 3A are concepts rather than blueprints; this is especially important in recognizing that boundaries might require adjustment depending on the results of the RFI and CMS.

3. Page 1-3, Section 1.4 Location of the Proposed Action. Some parcels of land within the Charleston Naval Complex are identified while some are not. Then the statements are made that "This DEIS only addresses the disposal and reuse of the Charleston Naval Base. The remaining activities within the Charleston Naval Complex are not scheduled for closure."

Charleston Naval Base is composed of activities which occur at eight different geographic areas, specifically: Short Stay, Sullivan's Island, Clouter Island, Degaussing Station, Naval Station Annex, Chicora Tank Farms, and the Naval Regional Medical Center, as well as the property commonly referred to as Charleston Naval Base. The DEIS addresses only the parcel of property commonly referred to as Charleston Naval Base but does not address these other seven non-contiguous properties. With the closure of Charleston Naval Base, some action will be taken regarding each of these non-contiguous properties, e.g., some Navy group will likely assume responsibility for operation for Sullivan's Island and the Navy Regional Medical Center, Clouter Island might be transferred to another Navy group or the Corps of Engineers, Chicora Tank Farms will be cleaned up along with the rest of Naval Base Charleston, and the fate of the Naval Station Annex is uncertain at this time; some of these might eventually be transferred to the private sector. EPA disagrees with the exclusion of these non-contiguous properties from the DEIS since they are integral parts of "Charleston Naval Base." EPA requests that the EIS be revised to include all of these properties.

4. Page 1-11, Section 1.4.3 Federal Property Disposal Procedures for Base Closure. The statements are made that:

Residual contamination may remain on certain areas of the Base after remedial actions have been completed or put in place, thereby restricting the future use of those properties. Should, at some time, future use of the property change requiring a greater level of cleanup, the Navy will be responsible for any additional remediation.

EPA 6 - Comment noted.

EPA 7 - As noted in Section 1.4 (Location of the Proposed Action), the DEIS addresses those portions of the Charleston Naval Base (i.e., Navy property) which have been determined to be excess to the needs of the Navy and have been designated for closure and disposal. Of the activities noted in the comment, the Short Stay Facility, Sullivan's Island, and the Degaussing Facility are on leased property which the Navy does not own. The leases will be terminated, and the current property owner will be responsible for future uses.

The Clouter Island Dredge Disposal Facility has not been determined to be excess to the needs of the Navy, and has not been identified for disposal. It will be retained and will continue to be used as a dredge disposal facility. The Naval Station Annex is being transferred directly to the Air Force and is, therefore, being addressed via a Categorical Exclusion. The Chicora Tank Farms are considered to be part of the Base and will be disposed of to the Charleston Naval Base Redevelopment Authority. As shown on Figure 2-4, the Chicora Tank Farms are proposed to be reused as recreational lands to support the Toole Middle School.

The Naval Regional Medical Center is not scheduled for closure and is not addressed in this DEIS.

EPA 8 - The comment and the four general points raised by EPA are noted. The Charleston Naval Base property will be cleaned up to applicable federal and state standards prior to deed transfer.

While EPA generally agrees with these statements, we raise four points.

- a. Contamination is not static in the environment. Rather, it migrates. Thus, cleanup to as nearly an ideal level now would involve less volume than at some time in the future; less volume equates to less costs.
- b. All of the right people and equipment are already present and information needed for cleanup will soon be generated. To use these people, equipment, and information now would be quicker, easier, and cheaper in the long run than it would be in the future if the Navy had to re-mobilize with similar people and equipment and repeat some of the data gathering to generate information which would be current at that future time before proceeding with any additional cleanup.
- c. Actual future land use may, or may not, be consistent with current land use plans.
- d. The Navy can transfer the Charleston Naval Base property but not the environmental liabilities associated with any contamination left on that property.

Thus, EPA does not favor a goal of minimal cleanup.

5. Page 2-3,4 Section 2 Implementation of the Reuse/ Redevelopment Plan, Performance Standards and Requirements. We suggest that the Redevelopment Authority consider adding, to the list developed by the BEST Committee, the following performance standard to the Environment category:
"Development should be such that there will be minimal, or no, degradation of the environment on or surrounding the site. Enhancement of the site's wetland, habitat, and historic values is desirable."
6. Page 2-23, Alternative Reuse Scenario 3: Preferred Development Plan. Part of the proposed Development Plan is the new transportation (road and rail) corridor extending from Interstate 26 to the Base. The DEIS presents a conceptual alignment for this corridor. On page 4-5, the DEIS states that "The final corridor location will be determined during Phase I of the Plan's implementation by the Redevelopment Authority, [South Carolina State Ports Authority], City of North Charleston, and [South Carolina Department of Transportation] with input from USEPA and [South Carolina Department of Health and Environmental

EPA 9 - The performance standards as stated on Pages 2-3 and 2-4 of the DEIS are taken directly from the Reuse Plan as prepared by the BEST Committee. Although the Navy would support this standard as proposed by EPA, only the Redevelopment Authority can adopt it. The need for federal and state permits and approvals during the planning and implementation of the Reuse Plan will ensure minimal environmental degradation.

EPA 10 - Comment noted, the Navy endorses active public participation in the siting of the proposed road/rail access extending from the Base to Interstate 26. Participation can be achieved via attendance at Redevelopment Authority meetings and through the review and permitting process of the Army Corps of Engineers and the state's Office of Ocean and Coastal Resource Management. It is likely that additional NEPA documentation may also need to be prepared (see comment DOI 4)

Page Four of Nine

Control]. Based on the potential for community impacts, we suggest that public participation be an integral part of this process.

Related to the corridor's impacts, we note that Figure 4-4 Noise Contours With Associated Noise Levels (dB(A)) provides an outstanding description of the noise impacts. Also, we concur with the proposed mitigation presented in Section 4.7.5 Mitigative Measures.

7. Page 2-36, 2-38, Table 2-5 Comparison of Environmental Impacts. The emission estimates for the preferred plan triple emissions of NOx due to increase in railway traffic. Train diesel engine manufacturers are currently being forced to produce cleaner burning engines by EPA regulations. These numbers may overestimate the actual emissions for the year 2015 by as much as 50%.

The preferred plan proposes significant roadway changes which should help the flow of traffic in the region. If this plan is implemented it is important to include the construction of the new interchange at I-26. Eliminating this interchange from the plans could significantly affect flow of traffic from the intermodal terminal. New flow patterns could change traffic speeds and adversely affect air quality.

8. Page 3-5, Section 3.1.2 Surrounding Land Uses, Page 4-4, Section 4.1.1 Preferred Development Plan (External Land Use Consistency), and Page 4-10, Section 4.1.2 Alternative Reuse Scenario 1 (Land Use Impact Analysis). EPA suggests that caution be exercised in interpreting Reuse Scenarios 3 and 3A because of the impact of neighboring properties. The area neighboring Charleston Naval Base has been heavily industrialized since pre-Revolutionary War days. Some of these areas are heavily contaminated; some of these heavily contaminated areas are currently identified as Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) sites. EPA recommends that the impacts, including environmental liabilities and regulatory constraints, of reuse plan related construction in these contaminated areas be considered in the EIS.
9. Page 3-39, Section 3.4.2 Water Quality. Reference is made to the investigation conducted in support of the Stormwater Discharge Permit. The statement is then made that "The potential exists for several industrial sources to discharge wastewater to the Cooper River." The statements need to be made that "The Base Realignment And Closure (BRAC) Cleanup Team (BCT) is currently pursuing an investigation of these

EPA 11 - Comment noted.

EPA 12 - Table 4-9 has been updated to reflect the impact of new locomotive emission standards to be implemented in 2005. This has reduced projected annual emissions of NOx from 499 tons per year to 330 tons per year.

Traffic flow patterns can indeed affect air quality. The difficulty with projecting air quality impacts for roadway improvements planned for the distant future is the lack of detailed information on lane configurations, projected traffic volumes, etc. required for modeling purposes. At the time road improvement plans are finalized, for example for the I-26 interchange cited in the comment, detailed air quality analysis may be conducted.

EPA 13 - Comment noted. The DEIS acknowledges the industrial nature and contamination on non-Navy lands in the vicinity of the Naval Base. The only reuse plan-related construction off base would involve the proposed road/rail access to the southern part of the base which is included as part of Development Concepts 3 and 3A. Since the identified alignment for this road/rail access is conceptual, detailed study of its potential impacts is not possible at this time. At such time as a specific alignment is proposed, detailed analysis, including site contamination, can be undertaken. See Comment DOI-11.

EPA 14 - Comment noted. Section 3.4.2 has been revised accordingly.

sources for the purposes of ensuring that all industrial discharges comply fully with the Stormwater Discharge Permit and the National Pollutant Elimination Discharge and Elimination Systems (NPDES) Permit requirements. The BCT is composed of representatives of the Southern Division of the Naval Facilities Engineering Command, Charleston Naval Shipyard, South Carolina Department of Health and Environmental Control (SCDHEC), and EPA."

10. Page 3-58, Figure 3-9 Regional Roadway Network. Clouter Island needs to be identified. The old ammunition depot and dredge disposal areas need to be identified.
11. Page 3-69, Section 3.9.2 Economy, Employment, and Income, second paragraph. Charleston Air Force Base is mentioned here. Is Charleston Air Force Base or Charleston Naval Weapons Station intended here? Should not Charleston Naval Weapons Station be included here?
12. Page 3-111, Section 3.13.1 Installation Restoration Program. The number of hazardous waste sites needs to be updated.
13. Page 3-124, 3.13.7 Radiological Issues. Areas of radiological contamination at the Base are being categorized "based on the past and present use of the areas, review of past radiological surveys, operating records, and interviews with senior employees." There was little control over the General Radioactive Material (G-RAM) materials between World War I and the mid-1970s, especially in the areas outside of the shipyard. Given the lack of historical data prior to the 1960's, what is the confidence level of the stated system of categorization? We recommend that no area be assumed to be free of G-RAM contamination without survey data consistent with Nuclear Regulatory Commission requirements and with the Navy's guidelines used for Naval Nuclear Propulsion Program radioactivity.
14. Page 3-126, Section 3.13.8 Radon. The radon survey is discussed along with the elevated radon concentrations identified in Building 202. This section concludes with the statement that mitigation is required within five years. Please note that the EPA "action level" for radon does not require mitigation - it is only a recommended action level. Mitigation of Building 202 is required by EPA's RFI process. An explanation is needed as to the Base's goals of "hot-turnover," reaching a Finding Of Suitability to Transfer (FOST), and the projected schedule for transferring this building, and plans for mitigation of the radon in Building 202.

EPA 15 - Comment noted. The intent of Figure 3-9 is to illustrate the regional roadway network, and not land uses.

EPA 16 - Comment noted. The statement has been corrected to state that "The Charleston Naval Complex and the Charleston Air Force Base employ..." The Naval Complex includes the Naval Weapons Station.

EPA 17 - Comment noted. Text has been updated as has Appendix E.

EPA 18 - A thorough review of the use/history of all Naval Base Charleston (NAVBASE) buildings has been accomplished. Based on this history, Charleston Naval Shipyard (CNSY) has categorized buildings based on potential G-RAM contamination. CNSY is confident in the system of categorization due to this extensive research. Also, an additional category has been added to the proposed NAVBASE G-RAM survey plan. This category was developed to ensure any facility whose history did not rule out exposure to G-RAM (e.g., a long and unknown history) would receive a survey prior to unrestricted release. This survey consists of a walk through survey with a sensitive gamma scintillation instrument. Facilities within the controlled industrial area of Charleston naval Shipyard have undergone a similar walk through survey since 1982, which supplants the need for this survey within the controlled industrial area of the Shipyard.

Facilities whose only exposure to G-RAM would have been to common commercial items, such as housing units equipped with smoke detectors, do not warrant G-RAM surveys for release.

EPA 19 - In January 1989, the Secretary of the Navy initiated the Navy Radon Assessment and Mitigation Program in response to the Indoor Radon Abatement provisions of the Toxic Substances Control Act. As a result, random radon level testing surveys were performed on the Naval Base Charleston in 1994. As indicated in the Draft Environmental Impact Statement, Building 202 on the Naval Base contained radon gas concentrations slightly above the Environmental Protection Agency's suggested corrective action level. On October 31, 1994, the Office of the Under Secretary of Defense issued the Department of Defense (DoD) policy for radon gas at base realignment and closure (BRAC) properties. This policy requires that any available and relevant radon assessment data pertaining to BRAC property being transferred shall be included in the property transfer documents (i.e., Finding of Suitability to Lease and Finding of Suitability to Transfer). The DoD policy is not to perform radon assessment or mitigation prior to transfer of the BRAC property unless otherwise required by law.

15. Page 4-13, Section 4.1.5 Mitigation Measures (Land Use). The statement is made that "Upon transfer of the complex from the Navy to the Redevelopment Authority, the lands or a portion thereof would become subject to local government control." Assuming that the transfer mentioned here refers to the transfer governed by CERCLA Section 120(h)(3)(B)(i), it should be recognized that the transfers of certain properties will involve environmental permits. Environmental permits are complex and therefore not quickly or easily transferred even under normal circumstances. However, when property such as at Charleston Naval Base which is under one environmental permit for each environmental media is subdivided, the issuance of environmental permits for the subdivided parcels is further complicated and slowed. These permits would be issued by SCDHEC or EPA.
16. Page 4-24, Section 4.3 Wetland Areas and Floodplains. The wetland impacts are associated with the loss of 77.5 acres of freshwater wetlands. We recommend that the Final EIS contain a more intensive evaluation of the functional values of these freshwater wetlands. We find the major weakness of the DEIS is a lack of a meaningful mitigation plan.
17. Page 4-29, Section 4.3.4 Cumulative Impacts (Wetland Areas and Floodplains). The 77.5 acre loss represents a significant direct and cumulative environmental impact. The comment that "On a regional level, the loss of wetland acreage would be insignificant" should be deleted in the Final EIS. It is contrary to wetland evaluation procedures in the Section 404(b)(1) Guidelines and detracts from the overall quality of the subject document.
18. Page 4-31, Section 4.3.5 Mitigation Measures (Wetland Areas and Floodplains), and Page 4-34, Section 4.4.5 Mitigation Measures (Water Quality and Hydrology). Something appears to have been left out of the final reference to the Code of Federal Regulations.
19. Page 4-45, Section 4.6.2 Alternative Reuse Scenario 1 (Air Quality). The plan indicates that mobile emissions are assumed to be 33% of pre-closure levels due to a 33% reduction in employment. If this is the case then the plan should assume mobile emissions that are 67% of pre-closure levels. Also, there is not a direct correlation between decrease in employment and decrease in mobile related emissions, and the EIS should provide some basis for this relationship.

EPA 20 - The statement referenced in this comment refers to the Base property becoming subject to local zoning and land development regulations, and not specifically to transfer governed by CERCLA Section 120(h)(3)(B)(i). However the Navy concurs with the remainder of the comment. See also Section 2.2.1 (Future Actions) of this FEIS.

EPA 21 - Comment noted. See comment ACE 1. Section 3.3 of the FEIS has been revised to include an assessment of the functional values of the freshwater wetlands. The DEIS does not include a wetland mitigation plan because of the conceptual nature of the Reuse Plan and its inherent lack of detail regarding future developments (e.g., location, layout, size, parking requirements, etc). Without these details, a meaningful wetland mitigation plan cannot be prepared. It should be noted that meaningful wetland mitigation will be the responsibility of the Army Corps of Engineers during the Section 404 permit review and approval process.

EPA 22 - Comment noted. See Comment ACE 1. Section 3.3 and 4.3 of this FEIS have been revised.

EPA 23 - Comment noted. Text has been corrected.

EPA 24 - The text of the DEIS contained a typographical error. Mobile emissions data contained in the Table for Alternative Reuse Scenario 1 reflect 67% of preclosure levels. The text has been corrected.

Although there is not a direct, detailed correlation between employment levels and mobile source emission levels, the DEIS assumes a general relationship that as less people are employed at a given location, there is likely to be a decrease in vehicle miles travelled (VMT) associated with work commuting trips. It is agreed that the percentage decrease may not directly correlate one to one due to residential location distribution, availability and use of public transportation, and other factors. However, the detailed information necessary to develop the site-specific relationship between mobile source emissions and employment levels is not available for the reuse plan. Rather than ignore this issue due to the lack of data, the analysis accounts for this contribution to the total emissions levels for the Preferred Plan using the general relationship described above.

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20. Page 4-65, Section 4.9.1 Population, last paragraph. "Losing" is misspelled.
21. Page 4-74, Section 4.10.1 Preferred Development Plan (Infrastructure and Utilities). The statements are made that:
- "The Navy will be responsible for maintaining the wastewater collection system on the base until the property is transferred via lease/deed. Following this date, the Redevelopment Authority would be responsible for undertaking any corrective actions necessary to comply with regulatory requirements and local ordinances including modifications to the existing on-base wastewater collection system."
- It should be recognized that leasing of Navy property would not relieve the Navy of environmental liabilities. Likewise, leasing done by the Redevelopment Authority would not relieve the Redevelopment Authority of environmental liabilities.
22. Page 4-89, Section 4.12 Cultural Resources. The DEIS references a Memorandum of Agreement (MOA) between the Navy and the South Carolina Division of Archives and History. If available, this MOA should be included in the Final EIS.
23. Page 4-89, Section 4.13 Preferred Development Plan (Environmental Contamination). The term "RFA/RFI program" is used when the term "corrective action program" is intended. EPA suggests that the change be noted.
24. Page 4-94, Section 4.13.1. Shipyard (Environmental Contamination). The statement needs to be added that "Conversely, 'hot turnover' will not delay investigation and cleanup."
25. Page 4-95, Section 4.13.1.1 Contingent Development Plan (Environmental Contamination). See Comment 2 above.
26. Page 4-99, Section 4.13.5 Mitigation Measures (Environmental Contamination). The number of hazardous waste sites needs to be updated.
27. Page 4-101, Section 4.13.5.1 Underground Storage Tanks. The statement is made that "As a result of the [Environmental Baseline Survey], the Navy has discovered numerous regulated unregistered USTs which have been reported to the SCDHEC by

EPA 25 - Comment noted. Text has been corrected.

EPA 26 - Comment noted. Text has been revised to indicate that "The Navy will be responsible for maintaining the wastewater collection system on base until the title of the property is transferred."

EPA 27 - Because the MDA was not completed prior to the publication of this FEIS, it could not be included. See Comment from the South Carolina Department of Archives and History for further information.

EPA 28 - Comment noted. Text has been revised.

EPA 29 - Comment noted. Text has been added.

EPA 30 - Comment noted.

EPA 31 - Comment noted. Text has been updated.

EPA 32 - Only seven USTs located near building 236 were identified as needing registration; however, this was done independent of the EBS. These USTs have since been registered with SCDHEC.

NAVSHIPYD Environmental Division personnel." The accuracy of this statement needs to be verified based on the latest available information.

28. Page 4-101, Section 4.13.5.2 Asbestos. The plan indicates that DoD policy will follow applicable asbestos regulations. The plan should specifically address the asbestos assessments of the building proposed for demolition. A large portion of buildings constructed by the military between 1940 and 1965 contain significant amounts of transite material which could be rendered friable depending on the demolition technique.
29. Page 4-102, Section 4.13.5.3 Lead Paint. Since there are currently no regulations governing the removal of lead based paints the DoD policy is acceptable.
30. Page 4-105, Section 4.13.5.8 Pesticides. The term "RFA/RFI program" is used when the term "corrective action program" is intended. EPA suggests that the change be noted.
31. Page 6-2, Section 6 Unavoidable Adverse Environmental Effects and Considerations That Off-Set Adverse-Effects, first full paragraph, second sentence. The word "obtained" should be "determined."
32. Page 7-1, Section 7 Relationship Between Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity. As the DEIS states, "Long-term productivity of the local Least Tern population could be severely affected as a result of demolition of structures with nesting populations due to other cumulative loss of nesting habitat throughout South Carolina." What mechanism is in place to ensure that, as stated on page 4-10; "Before any demolition/renovation to these buildings can be undertaken, the [South Carolina Department of Natural Resources] would be contacted to determine their presence at that time" and that "No impacts would be permitted during nesting periods from April to October"?
33. Page 11-3 DEIS Distribution List. The title of Madelein McGee needs to be updated.
34. Page A-4, Section A.1, Appendix A Federal Screening Process. See Comment 3 above.
35. Page B-4, Appendix B McKinney Act Task Force and Screening. "Plan" is misspelled.

EPA 33 - Section 4.13.5.2 (Asbestos) of the FEIS has been revised to address the removal of asbestos containing material (ACM) from buildings to be demolished.

EPA 34 - Comment noted.

EPA 35 - Comment noted. Text has been revised.

EPA 36 - Comment noted. Text has been revised.

EPA 37 - The preparation of this EIS does not preclude any required future notification of regulatory agencies pursuant to acquisition of permits that will be needed prior to the actual redevelopment. See Section 2.2.1 (Future Actions) of the FEIS. It will be the responsibility of the Redevelopment Authority to assure that all necessary permits are obtained and any and all mitigation measures and permit conditions are satisfied. The taking of adult terns, nests, or young (or for that matter, any migratory species), is prohibited by federal law (Federal Migratory Bird Treaty Act). This law applies to all activities under any circumstances.

EPA 38 - Comment noted. Text has been updated.

EPA 39 - Comment noted. See comment EPA 7.

EPA 40 - Comment noted. Text has been corrected.

Page Nine of Nine

36. Page E-1, Appendix E Hazardous Sites and Substances Inventory. This section needs to be updated consistent with the current number of hazardous waste sites.
37. Page E-18, Table E-2, Appendix E Hazardous Sites and Substances Inventory. The title should read "Area Of Concern (AOC) Summary."
38. Page E-77 Appendix E Hazardous Sites and Substances Inventory. "Clouter" is misspelled.

EPA 41 - Comment noted. Appendix E has been updated.

EPA 42 - Comment noted. Table E-2 has been updated.

EPA 43 - Comment noted. Text has been corrected.

ATTACHMENT B

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO--Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the Final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality.

Adequacy of the Impact Statement

Category 1--Adequate

EPA believes the Draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The Draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the Draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the Final EIS.

Category 3--Inadequate

EPA does not believe that the Draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the Draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the Draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised Draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the Council on Environmental Quality.

*From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment

Grassroots Conversion Coalition

35 Race Street • Charleston, SC 29403 • (803) 723-4438

December 10, 1994

Commander, Southern Division (Attn: William Sloger)
Naval Facilities, Engineering Command
2155 Eagle Drive, P.O. Box 190010
North Charleston, SC 29419-9010

Response to the Draft Environmental Impact Statement for the Disposal and Reuse of the Charleston Naval Base

To Whom It May Concern:

The Grassroots Conversion Coalition, an association of church, civil rights, neighborhood, and labor groups, would like to raise the following concerns and questions regarding the Draft Environmental Impact Statement (DEIS) prepared for the Charleston Naval Base. Robert Knight, speaking for the Coalition at the public hearing on November 29, raised some of these issues but there are a few additional concerns we would like to raise here.

1. Given that the Reuse Plan for the base is "conceptual" and that no detailed engineering plans have been done for any of the reuse scenarios, the DEIS states that it is "difficult to formulate exact impacts" (DEIS: 4-15, 4-24, 4-31). Given the lack of specificity of the current environmental impact assessment, as actual developments are proposed, supplemental environmental impact statements may be required. For example, if a private company intends to service or refuel nuclear vessels, it is essential that this specific plan initiate another environmental impact assessment process so that the public may have a say in actual base reuses that represent significant impact on the community. What criteria or processes have been established to determine what kinds of future developments on the base would trigger supplementary environmental impact assessments? What avenues for public oversight and involvement will be made available as specific reuse opportunities arise?

2. The DEIS does not address health impacts on base workers or local residents due to exposure to toxins nor does it mention remediation of these impacts. The communities represented by our Coalition strongly feel that documenting and

GCC 1 - Since the Reuse Plan is conceptual and, therefore, subject to revisions as components are implemented, it is likely that certain components may be different from that addressed in the FEIS, and may warrant supplemental EIS documentation. If a component of the Reuse Plan is changed from what is addressed in this FEIS prior to the Navy transferring title to the property in question, the Navy would be responsible for determining if the revisions are significant enough to warrant the preparation of a supplemental EIS and for preparation of the document. If a component of the Plan is changed from what is addressed in this FEIS after the Navy has transferred title to the property in question, another entity may be responsible for determining if the changes are significant and warrant the preparation of a Supplemental EIS. Under NEPA, EISs are only required for those actions involving a federal agency either funding, approving, or undertaking the action (e.g., granting of a Section 404 permit by the Corps of Engineers). In South Carolina, actions which do not involve federal funding or approvals would not require a NEPA EIS. A supplemental EIS could be undertaken by the Corps of Engineers prior to approving the proposed cargo terminal via a Section 404 or Section 10 permit. It would be the responsibility of other federal agencies to determine what kinds of future developments would require supplemental EIS documentation.

Opportunities for public oversight and input of specific redevelopment activities will be available through the Redevelopment Authority meetings, as well as future permitting processes as will be required by the Corps of Engineers, the Office of Ocean and Coastal Resources Management, EPA, and SCDHEC.

GCC 2 - The environmental remediation process: (1) includes an evaluation of the information on the site's physical, chemical, geographical, historical, and operational setting; (2) determines contaminants of concern associated with the site; (3) identifies and evaluates environmental pathways; (4) identifies and evaluates human exposure pathways; (5) identifies and evaluates public health implications based on available medical and toxicological information; and (6) develops conclusions concerning the health risks posed by the site and makes recommendations regarding further public health activities.

These assessments are reviewed by physicians, toxicologists, and environmental specialists from the United States Environmental Protection Agency and the State of South Carolina Department of Health and Environmental Control. If these assessments indicate possible health impacts, the information will be forwarded to the Navy Environmental Health Center or the Agency for Toxic Substances and Disease Registry for possible health impacts studies, epidemiological studies, or establishment of exposure or disease registries.

remediation of the impact of contaminants on people is at least as important as documenting and remediation of their impact on water, soil, vegetation, and animals. When will epidemiological studies and plans for remediation be conducted and made available to the public?

3. When will public meetings be held to discuss the results of the Resource Conservation and Recovery Act Facility Investigation, the Risk Assessment, and the Corrective Measures Study (p.3-104)? Publicity for the public hearings for the DEIS was not adequate to convey to broad segments of the community the significance of their participation. The scientific information involved in environmental impact assessments is often intimidating and alienating for community members and special measures must be taken to present this information in an accessible way and to clarify why public participation is needed. The Coalition recommends that publicity and outreach be improved for subsequent public hearings, including TV News, radio PSAs, large ads in the local papers, and targeted mailings to community organizations.

4. We find the section on Environmental Justice (p. 5-9,10) to be inadequate. In this section, it says that "Specific mitigation measures to minimize impacts to minority and low income communities are included in Section 5 of this DEIS": but no such information is indicated anywhere in section 5. Nor is there any substantial information documenting the specific impact of base closure and reuse on low-income and communities of color anywhere in this DEIS. Further, minority communities and low-income communities have not had "adequate access to public information relating to human health or environmental planning, regulation, and enforcement" (5-10) in one very important respect — these communities are not adequately represented or nor do they have adequate access to the Charleston Naval Complex Redevelopment Authority which is charged with redeveloping the base in a way to minimize adverse effects on low-income and people of color communities as on the environment.

5. The Cleanup Team for the base presented in writing to the Restoration Advisory Board assurances that the base would be cleaned up thoroughly to background levels so that contaminants would not foreclose on any future development opportunities. However, on p.4-95, the DEIS indicates that Solid Waste Management Units 9 and 14 containing hazardous waste would likely be capped rather than removed, "thus precluding intensive development." This information is both inconsistent with information we previously received (in a correspondence dated May 9, 1994) and is inconsistent with the community's objectives to ensure future development opportunities. Our position is that the entire base should be cleaned up to residential standards: anything short of this would eliminate certain future use options and therefore cheat the community out of potential economic benefits. The final EIS must address this issue explicitly and indicate what other contaminated sites are proposed to be contained rather than removed, as well as how these remediation measures preclude certain kinds of future use. The public also needs to know how any capped sites will be monitored and how frequently.

GCC 3 - The Resource Conservation and Recovery Act (RCRA) process has specific requirements for public participation. During the Corrective Measures Study, the public will be provided a chance to have input as to what the Navy will do to clean up any contamination found which may pose a risk to human health or the environment. Notice will be made in the Federal Register as well as in local news media. These events will also be discussed at the Restoration Advisory Board where community members have the opportunity to learn the progress for Naval Base cleanup.

Publicity for the DEIS Public Hearing involved announcements in the Charleston Post and Courier on November 12-14, 1994, publication in the Federal Register, several newspaper articles in the Charleston Post and Courier, development of a Fact Sheet, and direct mailings to over 500 people and organizations including local TV, newspaper, and radio media. Both the North Charleston Scoping Hearing (May 11, 1994) and the North Charleston Public Hearing (November 29, 1994) were broadcast live on local cable TV.

GCC 4 - Section 5.4 (Environmental Justice) of the FEIS has been revised to clearly identify the location of minority and low income populations in the vicinity of the base, specific impacts of disposal and reuse that could effect these populations, and summary statements of mitigation measures included in Section 5 that are intended to address these impacts.

Regarding access to public information and comment, sufficient opportunities to review and comment on the analyses of the EIS were provided to low income and minority populations. With regard to access to the Redevelopment Authority, as a public agency, this entity could provide public information and comment programs throughout the course of the 20-year implementation of the plan. However, this would be at their sole discretion.

GCC 5 - The response to the referenced May 9, 1994, document was addressing the question of "how clean is clean". The desirable goal is to clean up any contamination at the base to a background level which is an environmental quality that existed prior to the base. This background level has not yet been established and may be very difficult to determine. In the cases of SWMUs 9 and 14, these are past material and chemical disposal sites that may not be feasible to cleanup to background. This is a question that must be reviewed and answered during the Corrective Measures Study after all samples have been obtained and analyzed. The results of this study will be reviewed by the USEPA and SCDHEC and the final cleanup levels established which under any circumstances will be protective of human health and the environment.

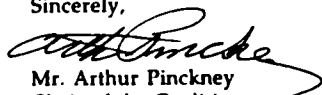
6. Why is it that the "RIMS model" for estimating job creation predicts that more indirect jobs will be created from fewer direct jobs through base reuse than were generated by a larger number of direct jobs when the base was in full operation? What variables is the RIMS model based on?

7. We find the section addressing job creation through the cleanup of the base to be vague and inadequate (p.4-67). From the single paragraph that addresses this issue, it suggests that the only employment generated by the cleanup would be taxi drivers, hotel housekeepers, cooks at Shoney's and the like. In accordance with the Boxer Amendment of the 1994 Defense Authorization Act, there must be a clear commitment to retraining and hiring displaced base workers for all aspects of the cleanup process. A thorough cleanup of the base is not only essential for optimizing future reuse options, but is also a crucial interim employment opportunity for displaced base workers. Training base workers for environmental cleanup is also a key way to build their skills for long-term re-employment. The public needs to know what specific steps are being taken to retain and retrain base workers for cleanup, who is being contracted to do this cleanup work, where they are based, and who they will be hiring to do the work. This information should be made explicit in the final EIS.

8. Is the Navy currently in compliance with the Clean Water Act? If not, what are the plans to bring it into compliance prior to the base transfer? Who will pay for bringing it into compliance with state and federal standards? It would be helpful for the final EIS to clarify in a table which federal and state environmental regulations the base is in compliance with and which ones not.

We look forward to receiving a written response to these questions and to seeing these concerns addressed in the final EIS. Thank you for your time and consideration.

Sincerely,


Mr. Arthur Pinckney
Chair of the Coalition

GCC 6 - The difference is due to the economic multipliers which are used to determine indirect job creation (i.e., the number of direct jobs are multiplied by this "economic multiplier" to determine indirect or spinoff jobs). Using the RIMS model, which is an accepted model for this situation, construction activities have a higher economic multiplier than do government and administrative activities. Due to the approximately \$600 million that will be spent on construction activities as the reuse plan is implemented, construction activities will heavily influence the projected indirect jobs created. The higher construction multiplier results in more indirect jobs being projected than from the same number of government or administrative jobs (i.e., those with a lower multiplier).

The variables, used in the RIMS Model calculation are discussed in Section 4.9.1 (Socioeconomic Impacts - Economy, Employment, and Income) of this FEIS. See also Table 4-13 of this FEIS.

GCC 7 - A memorandum of Agreement between Naval Sea Systems Command (who governs Naval shipyard work) and Naval Facilities Engineering Command is in place to screen environmental cleanup tasks and "contract" with the shipyard to have qualified personnel perform the task if they can accomplish the work below government estimates and meet an acceptable schedule.

In an effort to retrain displaced workers for cleanup-related jobs at the Base, the Navy will provide on-the-job training for shipyard personnel through closure-related compliance cleanup, to qualify them to accomplish environmental remediation. To date, over 1,000 shipyard employees have been trained in some aspect of environmental cleanup. The overall goal is to help workers who have one to three years to reach a retirement milestone, and to provide training which could be valuable to obtaining post closure jobs. The goal is to have an environmental detachment of approximately 300 trained/qualified employees.

GCC 8 - The EIS assumes that the Naval Base is in compliance with the Clean Water Act since: 1) all discharges have received NPDES permits; 2) there is no data indicating that illicit discharges are entering the Cooper River; 3) there is no data indicating elevated pollutant levels in the Cooper River in the vicinity of the Naval Base; and 4) the Cooper River meets its use designation. It should be noted that while the potential for illicit discharges is being investigated, none have been confirmed. If any such discharges are identified prior to the deed transfer of the property, they will be corrected by the Navy. The Redevelopment Authority will be responsible for improvements to the on-base infrastructure following the departure of the Navy, and will be responsible for future compliance with the Clean Water Act.

1 Johnson Road
Charleston, SC 29407
December 12, 1994

Mr. William Sloger
Naval Facilities Engineering Division
2155 Eagle Drive
North Charleston, SC 29419-9010

As a citizen who served as a member of BEST's Reuse Subcommittee, I appreciate the opportunity to comment on the Draft Environmental Impact Statement for Disposal and Reuse of the Charleston Naval Base of October 1994. I will limit my observations to the relationship between the DEIS and the Preferred Development Plan and its alternative.

The DEIS coordinates well information from the BEST consultants and resources and outlines clearly the environmental regulations that must be followed at all levels of government as well as the permits that must be obtained. The report lacks, however, hard data from environmental sampling, so much remains conjecture. Under these circumstances, the addition of the Contingent Development Plan makes sense and gives needed flexibility to the Redevelopment Authority in implementing the community-approved reuses for the Base and Shipyard.

The Contingent Development Plan warrants special comment. Provided that the proposed 200-foot extension of the Cargo Terminal into the Cooper River gains approval from the Corps of Engineers and DHEC's Office of Ocean and Coastal Resource Management, this plan offers advantages in only affecting 9.3 acres of wetlands, and avoids the need for a Section 404 Permit. Whether the Solid Waste Management Units 9 and 14, the closed landfill and chemical disposal area, pose insurmountable problems under requirements of the Resource Conservation and Recovery Act, the Contingent Development Plan may justify itself through its lesser impact on wetlands. The relative impacts on storm water management might also be addressed.

The DEIS assumes demolition of unusable buildings in a concentrated time frame and assesses the short-term environmental impacts accordingly. Due to cost constraints by the Redevelopment Authority, these impacts may be lessened by being spread out over a longer period of time.

The DEIS could more clearly show the relationship between short-term negative impacts on the immediate neighborhoods for air quality and noise and the long-term benefits of having residential streets, pathways and bikeways linking the citizens to new indoor and outdoor recreational opportunities.

The DEIS assumes funding for environmental cleanup by the Navy. The uncertainty of funding for cleanup of all bases impacted by BRAC surely will have negative effects. For instance,

LB 1 - Comment noted. Data from environmental sampling which is not currently available, will be presented in the Environmental Baseline Survey, and the RCRA Facility Investigation being conducted by the Navy, EPA, and SCDHEC.

LB 2 - Comment noted.

LB 3 - Comment noted.

LB 4 - In terms of Air Quality and Noise, the short term impacts will be positive due to the lag time between withdrawal of Navy operations and the realization of redevelopment as proposed by the Reuse Plan. The long term recreational benefits of the Plan as identified in the comment are noted.

remediation of contamination at the Chicora Tank Farm and the closing of the underground tanks there might be so costly that the Norman C. Toole Middle School might have to continue without adequate outdoor recreation space.

Concerning the 30% increase in recreational facilities, it should be made clear that North Charleston currently lacks the requisite open space and recreational facilities for a city its size (Sasaki, II, A.6, p. 11). This is an important part of any discussion of the environmental impacts upon the immediate neighborhoods.

In discussing the impact of the changes in the railway network, the possible adverse impact of two trains per day is not put in the full context of the reconfiguration of existing tracks plus plans to elevate some intersections. Greater reliance upon rail rather than trucks for future port and marine industrial uses would lessen the impact of trucking through existing North Charleston neighborhoods (Sasaki II, A.2).

Despite these small discrepancies, I think that the DEIS makes good the effort to help insure that the reuse plan is one which can be implemented and meet all environmental requirements. I commend the Navy for adding flexibility to the process by adding the Contingent Development Plan.

Ledlie D. Bell

LB 5 - The Navy has expressed a commitment to Base cleanup funding. Funding sources available to the Department of Defense include monies in the Defense Environmental Restoration Account (DERA), an appropriated account replenished by Congress; and funds allocated through the Base Closure and Realignment Act of 1990. This EIS has been prepared with the assumption that funding sources will remain intact throughout the cleanup process. If, as stated in the comment, cumulative costs for BRAC-related cleanup cause delays in funding and, in turn, remedial activities, the Navy may be forced to modify its management of Base cleanup. Contaminated areas may have to be prioritized for cleanup based on available funds and demand for reuse, yielding delays in the redevelopment of the property.

LB 6 - Comment noted.

LB 7 - Comment noted. While potentially reducing the impacts of trucking through North Charleston neighborhoods in the vicinity of the Naval Base, the reconfiguration of rail alignments in Concepts 3 and 3A will result in short-term and long-term impacts. Until detailed reconfiguration plans are available, detailed impacts cannot be addressed. Conceptual improvements to the existing rail facilities are addressed in Section 4.8.1 (Transportation Impacts) of this FEIS.

COMMENT CARD

PUBLIC HEARING/NOVEMBER 29, 1994

Name: Town Planning Associate (Milton Lombard) President

Agency/Organization: Town Planning Assoc

Address: P.O. Box 158 Charleston, S.C. 29402

803 724 0086

- ☒ Please add name to mailing list. ☐ Please mail copy of Draft EIS.
☒ Comments on back of card. See attached sheets for comments.

Please provide written comments on the back of this card and return to the sign-in desk or mail in written comments to:

Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
ATTN: William Sloger
North Charleston, SC 29419-9010

Written comments must be postmarked by December 12, 1994

9 DEC 1994

Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
ATTN: William S. Brown
North Charleston, SC 29419-9010

Dear Sir:

Below please find solicited comments concerning the "Draft Environmental Impact Statement".

COMMENT:

Source: DEIS 3.3 Alternative Reuse Scenarios

	Alternative #1	Alternative #2	Alternative #3
	low high	low high	low high
Jobs created	1900-9479	2000-11352	9100-11600
Cost to RDA	\$19,600,000	\$ 52,570,300	\$ 93,710,000
Cost Developer	24,570,000	70,700,000	904,000,000
National Rec		41,700,000	24,300,000
Total Cost	\$44,368,500	\$164,970,000	\$992,010,000
Cost/Job High	\$23,351	\$82,485	\$109,012
Cost/Job Low	\$ 4,491	\$14,532	\$ 85,516

The cost to create new jobs under Alternative # 3 appears extremely high when compared to Alt #1 & Alt #2. To spend close to a Billion Dollars not counting inflation over 20 years and to gain 1721 jobs by selecting alt #3 over Alt #1.

A 264 job gain selecting alt #3 over alt #2, does not appear to be cost effective either.

Since close to a Billion Dollars is to be spent on Alternative 3A, for the possible (pg 3-75) development of a Cargo Terminal, one would think that more documentation would be available in the DEIS statement concerning this SCSPA's facility regarding:

When they plan to be in operation, a true measure of their economic & environmental impact, funding, property tax consideration. More definitive breakdown of when and the type of jobs to be create as a results of this endeavor.

ML 1 - Comment noted. It should be noted that the Navy is required, pursuant to the Pryor Amendment, to consider the Community's approved reuse plan as the proposed action in the DEIS (see Section 1.2 Description of the Proposed Action) of this FEIS. Since the BEST Committee and the Charleston Naval Base Redevelopment Authority have approved Alternative Reuse Scenario 3 as the Preferred Plan, the Navy also has accepted this scenario, as well as Scenario 3A, as the proposed action. Since publication of the DEIS, Development Concept 3B has been developed and included in the FEIS as part of the Preferred Plan at the request of the Redevelopment Authority and the City of North Charleston.

While the comment is valid and warrants consideration by the Redevelopment Authority, the City of North Charleston, and the general public, it is not within the purview of the Navy or this FEIS to modify the community's approved conceptual reuse plan. The BEST Committee spent over seven months determining community preferences and attitudes regarding Base reuse, and in developing various reuse scenarios. Based on the evaluations and consensus building undertaken by BEST, Alternative Reuse Scenario 3 was selected as the Preferred Development Scenario, and subsequently submitted to the Navy.

Additional documentation regarding plans for the proposed cargo terminal are not yet available, and will not be generated until more detailed planning and engineering studies are complete. Currently, the Ports Authority is waiting for the results of ongoing site contamination investigations and the Corrective Measures Study before committing to construction of a cargo terminal at this site. Pending this commitment, projected for mid 1995, the level of detailed information requested in this comment is not available. It is likely that the developer of a Cargo Terminal would be providing this information to the Charleston Naval Base Redevelopment Authority as part of the planning and approval process.

9 Dec 1997

COMMENT 2 Table 3-21

Table 3-21 indicated that Naval Base Employed 45,379 military and civilian workers in 1989. This number will be reduced to just 1,335 workers in 1996. Not clear if the 16,832 Civilian and Contractor employees included in the 45,379 or should it be added to the total jobs lost to the SMSA.

Note to be more reflective of the employment lost Table 3-21 should include employment numbers for 1994, 1995, & 1996. This is most important to let the public know what the employment situation on the base will be in 1996 in a tabular format.

One should look closely at the scenario (3a) that after a loss of 45,379 jobs in seven (7) years, creates only 11,600 jobs over 20 years at a cost of One Billion Dollars. Did the DEIS include a cost benefit analysis or did they accept all Best findings as given?

Approximately 15,000 naval personnel will be shipped out by September 1995. The impact of this departure has not been addressed in the DEIS. This represents a loss of 33.3% of the original 45,379 (1989) peak year employment and 69.6% of FY 1993 employment civilian and military. pg 3-49

COMMENT 3

The economic impact is equally revealing in terms of: "Personnel Payroll and Procurement" Table 3-17

	1993	1996
	Before Closure	After Closure
Gross Payroll	\$ \$682,277,574	\$49,950,000
Procurement	\$ \$357,952,528	\$19,390,000
Total	\$1,040,230,102	\$69,340,000

I would think that both Gross Payroll and Procurement figures should go back to 1989 when the employment was at 45,379 to give a more accurate indication of magnitude of base closures economic impact.

COMMENT 4

Page 3-23 The

"The Proposed new 3.0 acre Maritime Industrial Park has the potential to accommodate 2.0 million sf of industrial space for 60 to 4000 workers" Page 3-1 Indicated that "The Charleston Naval Base has approximately 1,575 acres and includes 514 buildings totaling 7,968,505 sf.

ML 2 - Regarding Table 3-21, please note that footnotes a and b were inadvertently reversed in the DEIS. These footnotes have been corrected on Table 3-21 (now noted as Table 3-22 of this FEIS). Table 3-22 is intended to illustrate recent and existing conditions (e.g., employment) at the Naval Base, and not to project employment to 1996. See Section 4.9.1 of this FEIS for a discussion of projected future employment levels at the Naval Base.

The DEIS does use job estimate figures and cost estimate projections which were originally developed by the BEST Committee, since they were determined to be reasonably accurate given the assumptions used by BEST and their economic consultants. No cost-benefit analysis was conducted.

Sections 3.9.2 (Economy, Employment, and Income) and 4.9.1 (Socioeconomic Impacts) address the reduction in Navy personnel stationed at the Base. Employment impacts attributable solely to the closure of the Naval Base are not within the scope of this FEIS.

ML 3 - Comment noted. For purposes of this EIS, existing economic conditions which are described in Section 3.9 of the DEIS are presented as of 1993 since this is the most current year for which information is available. Employment figures dating from 1989 are provided in Table 3-21 for historical reference only. For the purposes of projecting economic impacts (see Section 4.9 of the FEIS) resulting from the Disposal and Reuse of the Naval Base, 1993 figures were used as the baseline.

ML 4 - The Reuse Plan proposes a 210 acre marine industrial park which is intended to provide modern, state-of-the-art facilities for new and existing industries. BEST determined that this could not be accomplished in the older and smaller facilities which exist in the Controlled Industrial Area (CIA). It should be noted that the Reuse Plan does not propose specific uses for individual building, but rather provides a general land use designation which could accommodate various specific redevelopments. It is likely that many of the facilities in the CIA will be reused either as part of the privatized shipyard or by other users.

There are approximately 2.3 million square feet of (existing) industrial space, 1.8 million square feet (existing) warehouse space & 2.2 million square feet of (existing) administrative office space." Question why fill or modify 210 acres of environmentally questionable land when millions of square feet of industrial and warehouse space are now available?

I would recommend that 50 acre of existing shops in CJA be given first preference, then other vacant existing facilities when ever possible. Develop 210 acre Maritime Industrial Park when private sector is ready to invest its capital.

COMMENT 5

Page 2-29

Extension of cargo/terminal into Cooper River, with major alteration to 133 acres of river frontage. It is important that RDA immediately apply for Corps and DEHEC permits to see if this is a feasible alternative. Justification and documentation in the DEIS to radically alter this natural wetland area appears weak.

COMMENT 6

Pg 3-86 3.10.5 Heating System

I see no refer to the economic impact or the dollar amount involved if Navy walks from its contract with Foster Wheeler for the remaining 15 years of a 20 year contract. What is Charleston Counties exposure?

COMMENT 7

Pg 3-85 3.10.2 Wastewater System

Wastewater treatment will have a major economic impact on the NCSD income stream. As indicate in your report they will lose 16% of their wastewater flow. Would it be possible to translate this into the revenue lost to NCSD as a result of base closure.

The present waste water system, is dated, is built entirely on fill material and appears to be sinking. What type of economic impact will upgrading this system have on the new owners of the Charleston Naval Base?

COMMENT 8

General Comment: The Charleston Naval base is a heavily developed urban industrial complex.

ML 5 - Once a developer determines that the Naval Base site is suitable for a new cargo terminal, they will apply for all appropriate permits and approvals (see Section 2.2.1 Future Actions) for this development.

See Sections 3.3 and 4.3 of the FEIS for an updated discussion of wetlands and wetland impacts.

ML 6 - See Section 4.10.1 (Infrastructure and Utilities Impacts) of this FEIS.

ML 7 - NCSD estimates the annual net economics effect of the Naval Base Closure at \$5.8 million. This effect includes a direct loss of \$1.6 million from the naval base, an associated loss of \$1 million due to lost residential units, and an annual related cost of \$3.2 million due to previous system expansions required to meet city growth while providing capacity to the Navy (Green 1995).

Although the exact cost of upgrading the system will only be determined when engineering designs are formulated and costed, Sasaki did cost the upgrading of utilities (potable water, sanitary sewer, storm water, roads) at \$13.5 million for Development Concept 3.

ML 8 - Comment noted.



**NATIONAL CIVILIAN COMMUNITY CORPS
AN AMERICORPS PROGRAM**

December 1, 1994

Mr. William Sloger
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, SC 29419-9010

Dear Mr. Sloger:

I attended the public hearing you convened on November 29 in North Charleston. I noted no specific mention of the National Civilian Community Corps (NCCC) Southeast Region Campus during the briefing. I also examined the Draft Environmental Impact Statement (DEIS) (etcetera, etcetera); again, I saw no reference to the NCCC. There was, however, vague mention of civic and community service program "under the McKinney Act."

The purpose of this letter is to give official notice of the existence of the NCCC as a tenant of Naval Station, Charleston; to notify all concerned of our intentions and requirements; and to solicit the assistance of all parties in obtaining a solution to our facilities requirements that will allow this activity and its almost 250 employees to remain in the Charleston area.

For the record, the NCCC Southeast Region Campus is an organization of the Corporation for National Service, a wholly owned Federal government corporation. This campus, along with our other regional campuses, is encouraged by Federal law to use the facilities of downsizing or closing military bases. We are current tenants of Naval Station, Charleston, occupying part of Building 61 (the Submarine Training Facility) and all of Building 676, a Navy barracks. We have 220 compensated Corps Members and Team Leaders, as well as a staff of 24 employees of whom 13 are Federal employees. Our payroll exceeds \$3 million. Our mission directs that we perform the community service this community requires, relieving some of the pressures on local governments, school boards and non-profit charitable organizations alike.

Our continuing requirements are administrative space and classrooms (currently located in Building 61), a dining facility (meals are currently purchased from the Naval Station), and, since we are a residence program, a dormitory (currently Building 676). In late September, we requested permission from the

NCCC 1 - The text of the FEIS has been revised to include Section 3.11.6 (Human/Community Service Providers). See also Section 4.11.1 of this FEIS. In this way, both the McKinney Act Human Service providers and the NCCC can be addressed.

Reutilization Authority to negotiate for the current Bachelor Officer Quarters (Building 28) which would provide the berthing, food service, administrative and classroom spaces that we require. To date, we have received no reply to that request.

The issue here is recognition that the NCCC does indeed exist. We are the first non-Department of Defense tenant on the Naval Station and have been performing valuable community service in the Trident area since July of this year. Our national headquarters in Washington is deliberating future investment in the Charleston site and is considering doubling the size of this campus. To continue our investment in the region, we must have some recognition for our current and future needs in reutilization proposals. The buildings we occupy currently and those we would propose to lease in the future are to be demolished according to all of the Preferred Development Plans presented at the hearing. No interim plan for the NCCC is proposed by any of the plans, except vaguely in the DEIS which states "use of housing/community service facilities in the southern part of the property by McKinney Act (emphasis added) providers will conflict with long term development." Since the NCCC enabling legislation is not the McKinney Act, I can only assume the NCCC is not a "community service facility" addressed in the report. If it is, the area near the currently housing area is unsuitable because, to my knowledge, it has neither sufficient housing space for even our current Corps Members nor a suitable dining facility.

I appreciate the opportunity to comment on the DEIS and look forward to continuing to serve the Southeast Region from our base in Charleston.

Sincerely,



J. D. Biel
Campus Director

Southeast Regional Office
9721 Executive Center Drive N.
St. Petersburg, Florida 33702

December 2, 1994

Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, South Carolina 29419-9010
Attn: Mr. William Solger

Dear Mr. Solger:

The National Marine Fisheries Service (NMFS) has reviewed the Draft Environmental Impact Statement (DEIS) for Disposal and Reuse of the Charleston Naval Base, North Charleston, South Carolina. The following comments address information contained in the document and related information that was provided at a November 28, 1994, meeting with Navy officials.

As pointed out by several agencies represented at the November 28, 1994, meeting, the degree to which the document is intended to address National Environmental Policy Act (NEPA) requirements for reuse of the affected lands is unclear. As a purely conceptual document, the DEIS with some exceptions, provides a reasonable description of possible reuse actions and their environmental consequences. However, the document is not sufficient, based on environmental considerations, to select or support implementation of a particular alternative. To address this discrepancy and to avoid possible misunderstanding of the scope of the DEIS, a section should be added that identifies permits and other approvals needed to implement each alternative. Additionally, it would be highly beneficial to address the likelihood of obtaining needed authorizations and the procedures (e.g. preparation of engineering and biological surveys, additional pollution assessment and remediation requirements, and further NEPA documentation needs, etc.) that are likely to be encountered for each alternative. Otherwise the DEIS would not meet NEPA requirements with respect to implementation of a specific plan of action (alternative).

As noted at the November 28 meeting, there is likely to be considerable opposition to the outright filling of large areas of estuarine emergent and subtidal wetlands as proposed in Reuse Scenario 3. The addition of Reuse Scenario 3A is notable since it realistically addresses the remote likelihood of obtaining needed approvals to fill 77.5 acres of estuarine emergent wetlands as proposed in Reuse Scenario 3. Although this alternative calls for a substantial increase in encroachment into deepwater habitats in the Cooper River, tradeoffs such as reduced dredging may offset related adverse effects.

NMFS 1 - Section 2.2 (Implementation of the Reuse Plan) of the FEIS has been supplemented with Section 2.2.1 (Future Actions). This section identifies major permits and approvals which would be needed by either the Redevelopment Authority or the developer of the Cargo Terminal if this facility is included as part of the Base redevelopment. Due to the inherent conceptual nature of the community's Reuse Plan at this date, it is premature to speculate on the "likelihood of obtaining needed authorizations and the procedures...that are likely to be required for each alternative". Regarding the selection of Alternative Reuse Scenarios, it should be noted that by law, the Pryor Amendment requires that the Navy select the community's approved Reuse Plan as the proposed action under NEPA, therefore Alternative Reuse Scenario 3 was identified as the preferred alternative.

NMFS 2 - Comment noted. See Comment ACE 1. The issue of wetlands impacts has been addressed in additional detail in Sections 3.3 and 4.3 of the FEIS. Detailed planning and engineering studies and analysis regarding the proposed construction of a cargo terminal into the Cooper River will have to be undertaken by either the Redevelopment Authority or developer of the Cargo Terminal before specific impacts and the likelihood of obtaining needed permits can be adequately assessed. The DEIS does note the engineering and regulatory constraints of construction of the cargo terminal via bulkheading and backfilling.

When discussing possible alternatives, it is important to note that construction of a pile-supported cargo terminal would provide suitable attachment sites for benthic organisms that play beneficial roles in the estuarine environment. Also, for Reuse Scenarios 3 and 3A, we note that the National Oceanic and Atmospheric Administration (NOAA) Center for Coastal Ecosystem Health would be eliminated. Since this NOAA facility's operations are water oriented and rely on availability of docks and a water intake for its mission, it should be explained what, if any, plans there are to maintain this facility at the Charleston Naval Base or some other location.

We appreciate the opportunity to provide these comments. Please direct questions or comments to the attention of David Rackley at our Charleston Branch Office. He may be reached at (803) 762-8574.

Sincerely,

Andreas Mager, Jr.
Assistant Regional Director
Habitat Conservation Division

NMFS 3 - Comment noted.

NMFS 4 - As noted in the Charleston Naval Complex Reuse Plan, Summary Report dated June 1994, "The transfer of property and buildings needed by NOAA has been authorized by congressional legislation and is reflected in Phase I of the Reuse Plan. Long-term expansion of the proposed port facility may require NOAA to relocate elsewhere on the Naval Complex. This covenant was addressed in the original congressional legislation (page 19)." Responsibility for the future location of NOAA will be with the Charleston Naval Base Redevelopment Authority.

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Commissioner: Douglas E. Bryant

Board: Richard E. Jabbour, DDS, Chairman
Robert J. Simpson, Jr., Vice Chairman
Sandra J. Molander, Secretary

Promoting Health, Protecting the Environment

John H. Burris
William M. Hall, Jr., MD
Roger Laska, Jr.
Burnet R. Maybank, III

Office of Ocean and Coastal Resource Management

H. Wayne Beam, Ph.D., Deputy Commissioner

Christopher L. Brooks, Assistant Deputy Commissioner

(803) 744-5838

(803) 744-5847 (fax)

December 12, 1994

Commander, Southern Division
Attn: Mr. William Sloger
Naval Facilities Engineering Command
2155 Eagle Drive, Post Office Box 190010
North Charleston, South Carolina 29419-9010

Dear Sir:

This letter is written in response to your request for comments concerning the Draft Environmental Impact Statement for Disposal and Reuse of the Charleston Naval Base, North Charleston, South Carolina, October 1994. As you are aware, the testing and remediation of the contaminated areas present on the Naval Base is not yet complete, and the base re-use plans at this stage are very schematic. Specific plans to remediate the known sources of pollution, or actual plans to renovate or construct new facilities, build new roads and railroads, have not yet been designed. The final design of these facilities will be dependent upon a variety of physical, social, and economic factors, many of which are undetermined at this time. It is our understanding that this Environmental Impact Statement, (EIS) and the base re-use plan are not to be considered final documents, but are general indicators of the way the redevelopment authority wishes the base to look after the property is turned over. It is with this understanding that the Office of Ocean and Coastal Resource Management (OCRM) provides comments on this document.

I have several specific comments regarding the EIS and will list several issues which I feel need to be addressed and clarified before the final EIS is prepared. These issues need to be resolved before the design has begun and the permit process to actually build these facilities has started.

The EIS is correct in identifying the four issues which are most significant to the Office of Ocean and Coastal Resource Management (OCRM) in the redevelopment of the property. Those being:

OCRM 1 - Comment noted.

OCRM 2 - Comment noted.

- The development of a port facility along the Cooper River
- Management of stormwater runoff from the proposed developments
- Dredging, filling and mitigation of wetlands which would be dredged and/or filled in order to carry out the proposed developments
- The potential for Shipyard Creek to lose its navigability due to the proposed bridge and road crossing at the southern end of the base.

The EIS correctly lists three areas where the OCRM must be involved during the redevelopment process:

- A stormwater management plan must be prepared and individual stormwater permits issued for the smaller tracts of land located within the base.
- Corps of Engineers' 404 permits must be certified by the OCRM for any wetlands alteration.
- A consistency determination for the Coast Guard permit to construct a bridge over Shipyard Creek.

However, the EIS fails to note that direct SCDHEC-OCRM permits will have to be issued based upon our permitting rules and regulations for any alteration to the critical areas of the coastal zone. These would include permits to construct a port facility in the Cooper River, fill any intertidal wetland areas, dredge areas of the waterfront or construct roads or bridges across water bodies or jurisdictional wetland areas. As all of these activities indicated in the redevelopment plan will be undertaken by non-federal agencies, these direct OCRM permits will be required. The EIS should be revised to note these regulations and requirements.

With regard to the redevelopment of a port facility along the Cooper River - the issues that must be addressed are the benefits of constructing a port facility at this site rather than at other locations and the need to extend the facility into the river. These are design issues that cannot be fully addressed until the S. C. Ports Authority determines that it is feasible to construct a port facility and then determines how the various components of the port facility must be laid out to operate efficiently with economic success. By extending the port facility further out into the river, it might be possible to reduce shoaling, and dredging expenses required to maintain the channel and port facility. However, extending the wharf will also have environmental consequences in reducing the amount of light that can reach the water column which will effect the marine habitat of the area. These factors need to be quantified and included in either this section of the document or discussed in an implementation section that will describe when this assessment will be completed and who will be responsible for their completion. These studies must evaluate what amount of dredging will be reduced by extending the port facility further into the river, and what reduction in habitat quantity and quality will occur as a result of this extension. There are other factors that might also benefit or detract from the proposed design and these factors

OCRM 3 - Comment noted. This information has been included in Section 2.2.1 (Future Actions) of this FEIS.

OCRM 4 - Comment noted. It is acknowledged that the conceptual nature of the community's proposed reuse plan does not allow for a detailed evaluation of potential impacts from the construction and operation of a cargo terminal facility until further detailed design studies are conducted by the entity responsible for redevelopment. Although these factors cannot be adequately addressed at this time, the FEIS provides an expanded discussion of these issues in Section 2.2 (Implementation of the Reuse/Redevelopment Plan). See comment ACE 3.

should be noted as well. The EIS is the appropriate vehicle within which to address these issues.

Other related issues that must also be addressed concerning the expansion of the port facility involve the effect of the port location on the hydrology of the river. The construction of the facility could result in increased shoaling within this bend of the river, resulting in more frequent dredging. The river has been extensively measured and modeled as a result of the Cooper River Rediversion Project. This data might be useful in estimating the effects of extending a large facility into the river.

The location of the proposed port as shown in design concept 3A might also affect navigation. It appears to be located very close to the maintained channel. As noted previously this area is in the bend of the river. The navigational effects of extending the port into this bend should be addressed and included in the EIS.

The South Carolina Coastal Zone Management Program's Policies for Ports Development, page III-19 through III-21, and the Policies for Dredging, page III-55 through III-58, and the Permitting Rules and Regulations, Section 30-12A, Dock and Piers and Section 30-12G, Dredging, will apply and will be used to make the decisions on permits required to build this facility.

The second issue indicated in the EIS document that must be addressed is the management of stormwater from the proposed redevelopment plan. The redevelopment plan is schematic in nature and not specific. The plan indicates that additional stormwater management facilities will be developed to accommodate the redevelopment of the property. By utilizing the proposed system of retention ponds, the wetlands remaining on the site and a greenbelt system, a regional stormwater management system could be developed.

Considerable economic and environmental benefits can be realized through a regional stormwater plan. A master drainage and treatment system for the base would provide four major benefits. 1) Permitting requirements for the new facilities will be simplified substantially thus saving man power and time associated with preparing and processing permit applications. 2) The amount and cost of land devoted to stormwater management will be minimized. 3) Large ponds and other treatment mechanisms are more effective at pollutant removal than smaller systems. 4) The costs of treating stormwater are generally much less than removing pollutants from other waste streams. Given the limited assimilative capacity of the Cooper River and the hopes for attracting more industry, every opportunity to treat stormwater should be utilized.

During the redevelopment of the property, many of the old stormwater systems that discharge directly into the Cooper River should be redirected to flow into retention basins. The redevelopment plans should be designed to include a regional stormwater management system where all water is treated prior to release. When the port facility is designed, all water from the edge of the wharf should be transported back towards the mainland into a retention system and treated prior to release.

OCRM 5 - Hydrologic modeling of the effects of the cargo terminal on the Cooper River would be performed by the developers of the facility once specific design information is available. Data generated by the Cooper River Rediversion Project may provide some input data for the modeling. Additional discussion of hydrologic impacts to the Cooper River is included in Section 4.4 (Water Quality and Hydrology) of this FEIS.

OCRM 6 - The navigational effects of extending the proposed Cargo Terminal Facility into the Cooper River is addressed conceptually in Section 4.8 (Transportation Impacts) of this FEIS. The need for additional detailed information concerning ship navigation in the Cooper River will be determined as the detailed design process proceeds (See Section 2.2 Implementation of the Reuse/Redevelopment Plan). See comments ACE 3 and ACE 6.

OCRM 7 - Comment noted. See Section 2.2.1 (Future Actions) of this FEIS.

OCRM 8 - The Navy concurs that an effective storm water management plan for the Base property would be beneficial, and that every opportunity to treat stormwater should be utilized. However, given the conceptual nature of the reuse plan, a meaningful stormwater management plan cannot be prepared at this time. As development plans and engineering studies are undertaken, the Charleston Naval Base Redevelopment Authority will be responsible for preparing a storm water management plan, for review and approval by OCRM.

OCRM 9 - In concept, the Navy supports the redirection of stormwater discharges into retention basins, and that a regional stormwater management plan should be prepared. The specific design and function of a stormwater retention system would be part of the detailed planning and engineering studies to be undertaken by the Redevelopment Authority or other entity responsible for redevelopment. Section 4.10 (Infrastructure Impacts) of the FEIS provides projections for stormwater runoff volumes from proposed development and also projects retention capacity for the southern part of the Base property following development. More specific information cannot be accurately projected without more details regarding site development and layout.

The redevelopment of the Naval Base will bring many opportunities for remediation of these old and inadequate stormwater management systems. These opportunities should not be overlooked. The EIS should be more specific in explaining how stormwater and non-point source pollution will be managed during the redevelopment process. It is recommended that a conceptual stormwater management master plan for the entire Naval Base property be prepared and included in the EIS. This plan would be used as the basis upon which a final stormwater master plan could be developed. If a master stormwater management plan is not included as a part of the EIS, then a precise description of which agency will be responsible for developing and implementing the plan should be included. A schedule of implementation should also be included as a part of this review. The construction of a well functioning, regional stormwater management system that is capable of treating non point source runoff coming from the Naval Base property should be a major component in the redevelopment action. This document must adequately address this issue. The Stormwater Management and Sedimentation Act, Section 48-14-10, S.C. Code of Laws, 1991 Amend.) will be used as the basis for approving the stormwater management permits for individual tracts of land as they are submitted for permitting. A master plan will allow the project to be seen from the big picture point of view rather than from the piecemeal approval of individual parcels and would provide a more streamlined permitting review.

The third issue involves how the redevelopment plan will alter existing wetlands on the Naval Base property in order to carry out the proposed developments. These activities are likely to involve two types of activities, the alterations of saltwater wetlands, DHEC-OCRM critical areas, (including water bottoms) and the alteration of freshwater wetlands. Saltwater wetland dredging activities will be subject to the dredging policies of the S. C. Coastal Zone Management Program, pages III-55 through III-57, and the OCRM Permitting Regulations, Section 30-12G (Dredging) and 30-12I (Deposition of Dredged Spoil Material). The construction of a port facility could require additional dredging to occur. Factors that will affect this decision will include the design of the dock facilities, use of the port, size of the facility and its orientation to the river. The dredging related issues have not been adequately addressed in the EIS and need to be more thoroughly evaluated. Several alternative designs have been proposed, none have been adequately evaluated as to how they would effect the dredging requirements around the property.

It is also likely that a turning basin will be required in order to develop this property as a port facility. A turning basin will also result in maintenance dredging needs. This item is also not addressed in the EIS and needs to be analyzed to include the amount of dredging required to construct the basin, the frequency of dredging and availability of adequate disposal areas.

Since it is not practical to develop a master stormwater management plan for the Base at this time, the Charleston Naval Base Redevelopment Authority or other entity responsible for redevelopment will be responsible for preparation of this plan as discussed in Section 2.2 (Implementation of the Reuse/Redevelopment Plan) and Section 2.2.1 (Future Actions) of this FEIS.

OCRM 10 - See Section 3.3 and Section 4.3 (Wetlands and Floodplains) of this FEIS for additional discussion of wetland resources and potential impacts. Also, see Section 2.2.1 (Future Actions) of this FEIS.

OCRM 11 - The dredging requirements for each alternative were reevaluated to determine approximate differences in dredging that will be required following construction of the cargo terminal. In addition, the need for a turning basin for Development Concepts 3 and 3A was examined (see Sections 2.3.3.1 and 4.4.1).

With regard to the dredge material disposal. There are two areas of concern. The disposal area adjacent to Shipyard Creek is proposed to be closed and redeveloped as a part of the marine industrial park shown on the preferred development plans. This disposal area has been used infrequently in the past for maintenance dredged material disposal, but is a diked and usable site. The City of Charleston has recently rezoned Daniel Island spoil disposal area so that it will no longer be available for use for the maintenance dredging needs of the Charleston Harbor. The Corps of Engineers last year completed a study to locate new spoil disposal sites to replace disposal areas lost to development, closure, or other causes. All spoil disposal areas are very valuable commodities and becoming limited resources. The dredged material disposal requirements of developing a port facility on the Naval Base property must be considered before a decision is made on the location and construction of a port facility. This evaluation must consider the location for material disposal and the volume of material that will be generated by this proposal throughout the life of the project. This evaluation should include an analysis of the effects of the redevelopment action, but also an analysis of the increased use of Clouter Island as a replacement for other disposal areas in the Harbor. These are the critical issues that will determine the environmental (and most probably the economic cost) of maintaining and building a port facility at this location. The Naval Base has a long history of dredging the facility, channel depths, shoaling rates, and other historical data can be used to indicate where dredging has needed to take place in the past years. A modeling effort could be also used to demonstrate what volumes of materials would have to be removed based upon the conceptual designs of the port facility. If these issues cannot be addressed in detail in the EIS, a section describing the implementation, timetables for completion and responsibilities for finishing the necessary studies should be included.

The freshwater wetland impacts shown on the preferred plans and others will require OCRM coastal zone consistency certifications of the U. S. Army Corps of Engineers' 404 permits. The South Carolina Coastal Zone Management Program policies for most types of development activities require that fill or excavation of productive wetland systems should be avoided where feasible (see Chapter III, S. C. Coastal Zone Management Plan). If these activities cannot be avoided then mitigation is required. Mitigation regulations specify mitigation requirements for different types of activities. These requirements have been approved and have been made a part of the coastal zone management program. (Chapter III, Section XIV Mitigation Guidelines, pg. III-80). These policies and regulations will be used in determining if the individual projects will be approved. Because of the schematic nature of the project plans, the EIS cannot adequately address these impacts other than in generalities. Specific proposals to alter freshwater wetlands areas will have to be evaluated when more specific development plans are proposed to determine if the activity is consistent with the coastal zone management program.

OCRM 12 - An evaluation of the effects of the redevelopment action on dredged material generation and disposal has been incorporated in Section 4.4.1 of this FEIS. The capacity for potential disposal sites to accommodate this dredged material over the project's lifetime is also discussed in Section 4.4.1. More specific analysis and modeling will be performed by the Redevelopment Authority once the specific components of the Redevelopment Plan are known. A timetable for completion of the studies needed to support these analyses cannot be developed at this time because of the uncertainty of the overall redevelopment schedule.

OCRM 13 - Comment noted. See Section 2.2.1 (Future Actions), Section 4.3 (Wetlands and Floodplains Impacts), and Section 5.3 (Coastal Zone Consistency) of this FEIS.

The potential to block navigation of Shipyard Creek by the proposed bridge and roadway crossing at the southern end of the base is a concern. The policies of the S. C. Coastal Zone Management Program for roads and highways, Chapter III, pages III-21-23; for railroads, pages III-25-27, and the OCRM Regulations, R-30:12-F (transportation section) will be used to evaluate this project. The OCRM's two major concerns with the new road and rail projects will require a determination that the route selected is the most direct and that the wetland alteration is minimized. The other concern is that the height of the bridges does not restrict boat navigation. Shipyard Creek is a commercial water way and has been used for commercial traffic for many years. The EIS should include a more specific discussion of the ports navigation history including such elements as the present development patterns of the adjoining lands, wetlands and locations of the site, and the future development plans for all properties that adjoin the creek. This portion of the study should involve discussions with land holders, local governments and regulatory agencies that will be responsible for making decisions regarding the future development of the area. Based upon this information, a proposed height of the bridges should be selected and recommended in the EIS. The affect of this height requirement should be evaluated as part of the EIS. It is very important that the future development of these areas adjacent to Shipyard Creek be considered as construction of these bridges will significantly effect the use of this property.

One major issue regarding the comments made in evaluating the EIS concerns how the implementation of the environmental clean up of the Naval Base will affect the redevelopment plan. The OCRM realizes that the EIS has been completed expeditiously in an effort to hasten the turn over process, and fully supports this approach. However, most information regarding the precise measures that will be required to remediate environmental hazards at the Naval Base property are not known at this time. Remediation work plans have not been completed for most of the property. The clean up process could cause the entire redevelopment plan to change if an area is either too polluted or would take too long to clean up. In making comments on the EIS, the OCRM assumes that the work done to date has correctly identified most of the sources of contamination and that the technology and funding is available to remediate the sites without significantly affecting the redevelopment plan. Significant changes in the redevelopment plan could require the preparation of Environmental Assessments or possibly a revised EIS.

When the final EIS is prepared, it is the OCRM's intention to issue a consistency determination for the disposal of the Naval Base property and the subsequent reuse of the property, if the additional information cited as being needed is included in the final document. This information must specifically address our concerns regarding these issues.

It must be understood that our consistency determination of the final EIS will not prejudice a decision to permit any of these facilities, and those decisions cannot be made until final design plans for each development activity are submitted and reviewed during the public notice review process. The clean up of the base, economic conditions, business development opportunities and many other activities will in future years shape the way that this property is redeveloped.

OCRM 14 - The discussion of Shipyard Creek is provided in Section 3.1.2 of the FEIS. The height of the proposed road/rail bridge will be determined during the detailed engineering and design process, and will be subject to the review and approval of Army Corps of Engineers, OCRM, SCDOT, and the City of North Charleston.

OCRM 15 - Comment noted. During the preparation of the DEIS, the Navy worked closely with EPA and the SCDHEC in order to present an accurate and realistic assessment of the site contamination at the Base and to ensure to the extent practical that the Reuse Plan is implementable. This effort led to the preparation of Development Concept 3A.

The Navy acknowledges that work is still needed with respect to the investigation and evaluation of site contamination and the selection of appropriate cleanup methodologies. However, it has been determined, based on contacts with EPA, that enough information exists to make some preliminary determinations as to which areas can and cannot be redeveloped. It is with this understanding that Section 4.13 (Environmental Contamination) was prepared. See also EPA comments, dated December 9, 1994, included herein.

OCRM 16 - Comment noted.

The staff of the OCRM remains available to participate in the redevelopment process and looks forward to continuing to work with the Navy and the other parties involved in the reuse of the property. Should you have any questions please contact me.

Sincerely,



Robert D. Mikell
Director of Planning
and Federal Certification

RDM/G/Navy/jk

cc: Dr. H. Wayne Beam
Mr. Christopher L. Brooks
Mr. H. Stephen Snyder
Ms. Madelein McGee
Mr. Bernie Grossclose
Mr. Clarence Ham

December 5, 1994

Charleston Naval Complex Redevelopment Authority

Commander (Attn: Will Sloger)
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, SC 29419

133 King Street, Suite 301
Charleston, SC 29401
(803) 724-0670
Fax (803) 724-0674

Dear Mr. Sloger:

This letter provides comments from the Charleston Naval Complex Redevelopment Authority (the Authority) on the Draft Environmental Impact Statement (DEIS). We are very pleased with the DEIS since it endorses the community's reuse plan as the preferred plan and provides a thorough environmental assessment of impact. In general, we also support the concept of alternative scenario 3A as it gives the community increased flexibility to respond to environmental conditions. However, we would like to make four general comments concerning the DEIS.

- 1) The DEIS does not clearly indicate that the reuse plan does not propose precise boundaries for a privatized shipyard. In fact, the amount of property required will be adjusted based on private operators' needs. For example, the use of drydocks 3 and 4 may be required as discussed in the community's reuse plan. It is important that the community and the Navy acknowledge the "conceptual" nature of the proposed land use areas in the plan.
- 2) Scenario 3A of the DEIS attempts to define the internal layout of the maritime cargo terminal. Again, we endorse the concept that the layout must be flexible. However, the actual placement of facilities, within general boundaries, will be determined by the State Ports Authority or other users.
- 3) The 3A alternative scenario indicates additional recreation (green) areas to accommodate potentially contaminated sites. Indicating a specific use for these areas may reduce the Authority's flexibility and impact job creation. Existing or newly developed environmental remediation methods may allow other alternatives, such as light construction, that provide more jobs than recreation facilities. The 3A alternative should be flexible enough to permit all possible alternatives.
- 4) Finally, we would encourage you to expedite the Record of Decision (ROD). Completion of the ROD in early spring is critical to implementing the reuse plan.

C. Ronald Coward
Chairman
John E. Bourne, Jr.
Vice Chairman
Ronnie M. Givens
Secretary/Treasurer
Madeleine S. McGee
Executive Director

Raymond H. Anderson, Jr.
Rufus C. Berkley, Jr.
Thaddeus J. Bell, M.D.
X.O. Bunch, Jr.
Paul G. Campbell, Jr.
Jack T. Day
William J. Gilliam
Laura C. Keeling
John B. Williams

RDA 1 - Comment noted.

RDA 2 - Comment noted. Each of the reuse scenarios evaluated in the DEIS are conceptual in nature, and intended to provide a framework for intended land uses rather than specific development plans. The DEIS does not intend to propose or endorse specific boundaries for the shipyard or any other component of the plan. As Base redevelopment planning proceeds, the Charleston Naval Base Redevelopment Authority will have the responsibility for approving specific components of the Plan and will, therefore, be responsible for determining the specific boundaries of components such as the privatized shipyard.

RDA 3 - The layout of Development Concept 3A has been revised to allow for a more workable design for the proposed cargo terminal. This conceptual layout does intend to endorse the actual placement of facilities within the general boundaries identified, but merely to illustrate the approximate location for this proposed facility. The specific layout will be prepared by the Project Sponsors and will be subject to the review and approval of the Army Corps of Engineers and the State Office of Ocean and Coastal Resource Management (see Section 2.2.1 [Future Actions] of this FEIS). See comment SCSA 2.

RDA 4 - Pending the results of the RCRA Facility Investigation, the Risk Assessment, and the Corrective Measures Study currently being undertaken by the Navy, EPA, and SCDHEC, some limited development of these areas may be permitted at some point in the future. However, proposing redevelopment of these area at this time would be premature. Any redevelopment of these areas would be subject to the approval of the EPA and SCDHEC.

RDA 5 - Comment noted.

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DEIS
December 5, 1994
Page 2

As you know, redevelopment of the Charleston Naval Complex will be a dynamic process. The needs of various tenants will undoubtedly require some modification of the preferred community reuse plan. Incorporating our comments into the DEIS should provide the additional flexibility needed to ensure the most effective reuse of facilities.

Under separate cover, we will forward some minor clerical errors noted during our review of the DEIS. If you have any questions regarding our comments, please contact the Authority at our new telephone number (803) 747-0010 or facsimile number (803) 747-0054. Thank you very much for all your efforts in developing the DEIS.

RDA 6 - Comment noted.

Sincerely,

C. Ronald Coward

C. Ronald Coward
Chairman

Ray Anderson

Ray Anderson
Construction Committee

MSM:ah

cc: Bernie Grossclose (State Ports Authority)
Rear Admiral Oden (COMNAVBASE)
Beth Partlow (Governor's Office)

Please note our new mailing address:
The Charleston Naval Complex Redevelopment Authority
1690 Turnbull Avenue, Suite NH-47
Charleston, SC 29408-1955
Phone: (803) 747-0010 Fax: (803) 747-0054

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December 6, 1994

Commanding Officer
Department of the Navy
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, P.O. Box 190010
North Charleston, SC 29419-9010
Attn: Mr. Will Sloger, Code 203WS

Dear Mr. Sloger:

I am writing you to acknowledge receipt of the Draft Environmental Impact Statement (DEIS), Disposal and Reuse of the Charleston Naval Base, North Charleston, South Carolina, October 1994. Thank you for the opportunity to comment on the proposed DEIS. We are presently negotiating the language of a Programmatic Agreement (PA) with the Navy regarding the protection of cultural resources at the Charleston Naval Base and expect that this PA will address our concerns.

SCDAH 1 - Comment noted.

If you have any questions, call either Ms. Nancy Brock, Review and Compliance Branch Supervisor, or me, at 803/734-8086.

Sincerely,

Ian D. Hill
Intergovernmental review Coordinator
State Historic Preservation Office



UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

December 5, 1994

Commanding Officer
Southern Division Naval Facilities Engineering Command
Attn: Will Sloger, Code 203WS
P.O. Box 190010
North Charleston, SC 29419-9010

Dear Mr. Sloger:

Enclosed are comments on the Draft Environmental Impact Statement for Disposal and Reuse of the Charleston Naval Base, North Charleston, Dorchester and Berkeley Counties, South Carolina. We hope our comments can assist you. Thank you for giving us an opportunity to review the document.

Sincerely,

Donna S. Wieting
Acting Director
Ecology and Conservation Office

Enclosure

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Southeast Regional Office
9721 Executive Center Drive N.
St. Petersburg, Florida 33702

December 2, 1994

MEMORANDUM FOR: CS/EC - Donna Wieting

FROM: F/SEO2 - Andreas Mager, Jr.

SUBJECT: Draft EIS (DEIS-9411-01) for Disposal and Reuse
of the Charleston Naval Base, North Charleston,
Dorchester and Berkeley Counties, South Carolina

The subject document has been reviewed and the attached comments
are provided for your information and use.

Attachment

cc:
FWS, Atlanta
FWS, Charleston
EPA, Atlanta
SC DNR, Colombia/Charleston

south carolina state ports authority

Post Office Box 817, Charleston, South Carolina 29402-0817 Telephone 803/577-8608

Bernard S. Groseclose, Jr.
DIRECTOR
PLANNING AND DEVELOPMENT

December 12, 1994

Commander, Southern Division
Naval Facilities Engineering Command
P. O. Box 190010
North Charleston, S. C. 29419-9010

Attention: Mr. William Sloger, Code 203WS

Dear Mr. Sloger:

The South Carolina State Ports Authority appreciates this opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the disposal and reuse of the Charleston Naval Base. Since the preferred development plan created by the BEST Committee and presented to the Department of the Navy in June 1994 features a major commercial port facility, the environmental findings of this study are of particular interest to the Authority.

The viability of a new container terminal for the Authority at the south end of the Naval Base will be highly dependent on the timeliness of the required environmental clean-up of the site, the economic cost of developing a terminal within the constraints of the reuse plan, and the speed with which the property can be transferred to the Authority so that detailed planning and engineering and the necessary permitting can begin. The DEIS unfortunately does not report the full extent of site contamination and the subsequent required remediation since the site investigation is still incomplete. This information is critical to the Authority's decision-making process, and if not available by mid-1995 could necessitate the Authority's moving ahead with its planning for a terminal on Daniel Island.

The DEIS adds a reuse scenario 3A to allow some flexibility in implementation of the reuse plan. While it may appear that only minor modifications have been made to the preferred plan in order to create this contingent plan, the changes are really quite significant. In fact, the terminal layout which results is operationally unworkable since the

SCSPA 1 - Comment noted. As noted in Sections 3.13 and 4.13 of this FEIS and in EPA's comments dated December 9, 1994, the FEIS does not report the full extent of site contamination and selected remedial measures since the RCRA Facility Investigation and Corrective Measures Study is not complete. This information is being documented in separate reports to be released by the Navy as they are completed.

SCSPA 2 - Based on discussions with the State Ports Authority and the Charleston Naval Base Redevelopment Authority, the layout of Development Concept 3A, as presented in the DEIS has been revised in the FEIS to make the layout more "workable" when considering the operation of the cargo terminal. In the revised layout as presented in the FEIS, the State Department would be relocated by the Redevelopment Authority to suitable space elsewhere on the Base or in the local community at no cost to the State Department. This allows for the proposed intermodal railyard to be moved to the west to be located along the back of the proposed cargo terminal. The result is that the cargo terminal becomes more efficient from an operations standpoint since the container area is not bisected by the railyard. The revised Concept 3A is shown as Figure 2-5 and discussed in Section 2.3.3.1 of this FEIS.

Commander, Southern Division
Attention: Mr. William Sloger
Page 2
December 12, 1994

intermodal railyard bisects the containeryard and would hamper cargo vessel operations. The Authority cautions against this attempt to design the cargo terminal without experienced engineering input which it could provide.

The Authority is also concerned that any effort to avoid existing wetlands and contaminated areas, such as SWMU 14 and SWMU 9, by shifting the terminal further into the Cooper River could have equivalent environmental impacts while driving up construction costs disproportionately. It is highly possible that many functional areas of the cargo terminal could be located on contaminated sites with proper capping and little remediation. These issues need to be more carefully considered before significant limitations are placed on development of the site.

The Authority agrees that some interim uses of properties within the designated cargo terminal area will conflict with long-term development of the terminal. Such uses need to be carefully considered so that further restrictions, such as the State Department location, do not interfere with the viability of the cargo terminal.

The Authority stands ready to assist wherever possible in the refinement of the EIS or to expound upon the issues raised above. Thank you again for the opportunity to comment, and please do not hesitate to call if we can be of further assistance.

Sincerely,



Bernard S. Groseclose, Jr.

BSG,Jr/jl

SCSPA 3 - Comment noted. The siting of portions of the proposed cargo terminal on contaminated areas, as suggested, would be based on the findings of the ongoing RCRA Facility Investigation and the Corrective Measures Study, and would be subject to the approval of EPA and SCDHEC.

SCSPA 4 - Comment noted. The interim use of portions of the Base designated for redevelopment of the Cargo Terminal will have to be coordinated between the Charleston Naval Base Redevelopment Authority and the specific user (e.g., State Department, NCCC, NOAA, human services providers, etc.) in order to ensure that conflicts will not interfere with the proposed development of a cargo terminal.

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**Responses to Oral Comments Received at
the November 28, 1994, Public Hearing at
the Chicora Neighborhood Center and the
November 29, 1994, Public Hearing at
North Charleston City Hall**

Two Public Hearings were held to obtain public comments on the DEIS. Complete written transcripts of the DEIS Public Hearings are not included herein. Copies can be obtained from the Department of the Navy, Southern Division, Naval Facilities Engineering Command. Comments as contained herein are summarized from the actual written public transcript. Brief responses are also provided, with a reference to a particular section of the FEIS if necessary.

The following comments were received at the November 28, 1994, Public Hearing held at the Chicora Neighborhood Community Center.

- 1) **COMMENT** - Concern was expressed over the financial cost/benefit analysis which compared the three alternative reuse scenarios, particularly with respect to the cost of implementation versus the beneficial result of jobs created. The speaker was concerned that Alternatives 1 and 2 would generate similar employment as Alternative 3 (the community's Preferred Plan) with significantly less cost to the community. (Mr. Milton Lombard)

RESPONSE - Comment noted. The financial cost/benefit analysis for each alternative was conducted by the BEST Committee as part of the preparation of the Reuse Plan. Based on this analysis, and the consensus of the Community which BEST received, BEST selected Alternative 3 as the Preferred Plan. As such, the Navy identified Alternative 3 as the Preferred Plan for the purposes of the DEIS. The DEIS incorporates financial and cost data as generated by BEST. No additional financial analysis was conducted. Mr. Lombard also submitted written comments which are addressed herein as comments ML 1 through ML 8.

- 2) **COMMENT** - Concern was expressed about the proposed road/rail access and the impact it would have on residences located in the area. (J. Seth Whipper)

RESPONSE - The proposed alignment of the I-26 interchange and the rail access is addressed in Sections 4.1 (Land Use), 4.7 (Noise), 4.8 (Transportation), and Figures 4-1 and 4-4 of the FEIS. Potential impacts include noise, visual, land use, and potential displacement of residences. A trailer park currently used to house students from a local college is situated in the conceptual corridor alignment. As noted in the FEIS, the corridor alignment is conceptual and will be subject to review and approval by the Corps of Engineers, SCDOT, South Carolina Office of Ocean and Coastal Resource Management, South Carolina Department of Health and Environmental Control, the City of North Charleston, and other state, federal, and local agencies.

- 3) **COMMENT** - How long will it take for the proposed road/rail access to become a reality, and will there be any jobs created before then. (Ms. Betty Harris)

RESPONSE - BEST initially proposed for this access to be constructed during Phase I of the construction of the cargo terminal (between five and 10 years). The actual time will be determined by the remediation of the southern part of the Base and the date the property is deeded to the Redevelopment Authority. The detailed planning and design for this access would be undertaken by the developer of the Cargo Terminal. Jobs will be created/retained in other parts of the Base (e.g., shipyard, State Dept., NCCC, etc) before the cargo terminal is completed.

- 4) COMMENT - What will be the impact on the trailer park, will these people be moved? (Ms. Gussie Green)

RESPONSE - If the final alignment of proposed road/rail alignment will traverse the trailer park, the Redevelopment Authority or the developer of the Cargo terminal (assuming Development Concepts 3 or 3A), would be responsible for acquiring the land and transferring the residents. As noted above, the park is currently being used to house students from a local technical college.

- 5) COMMENT - There is concern over the impacts to the local community of the realignment of roads and the long trains through the neighborhoods, especially over 5-mile long trains interrupting traffic. What is the design of overpasses? (Mr. Willie Smith)

RESPONSE - The impacts of rail traffic resulting from the Preferred Plan is addressed in Section 4.8 (Transportation) of the FEIS. The mitigation and designs, as proposed by BEST, are conceptual and are intended to be finalized as the detailed engineering and planning proceeds. It is projected that train traffic would include two trains per day, each about 1 ¼ miles in length. Specific design of road/rail overpasses will be undertaken by the Redevelopment Authority or the developer of the Cargo Terminal.

- 6) COMMENT - Does the proposed road/rail access tie into the Wando Terminal? (Ms. Lucille Whipper)

RESPONSE - No, it crosses Shipyard Creek, and not the Cooper River.

- 7) COMMENT - Would like to see increased tourism use of the Base, potentially including cruiseship lines and family-oriented activities. (Mr. Jay Patel)

RESPONSE - Comment noted.

- 8) COMMENT - Commentor noted the beneficial impacts, as noted in the DEIS, of including bikepaths connecting the recreation uses on the Base with the surrounding communities. (Ms. Ledlie Bell)

RESPONSE - Comment noted.

- 9) **COMMENT** - Commentor interested in the amount of time it would take to construct the proposed cargo terminal, five years or 20 years. (Mr. Milton Lombard)

RESPONSE - Construction of the cargo terminal is dependent upon the City of North Charleston's approval and a commitment by a developer. Construction could begin as early as 5 years hence, but likely would not be completed for about 20 years. The city of North Charleston has endorsed Concept 3B which does not include a Cargo Terminal.

- 10) **COMMENT** - Does the DEIS look at urban runoff from the proposed cargo terminal? (Mr. Milton Lombard)

RESPONSE - Yes, the DEIS does address storm water runoff from the cargo terminal and does project the amount of storm water retention/detention which would be needed based on the conceptual plan provided by BEST. See Section 3.10.3 (Storm water Drainage) and Section 4.10 (Infrastructure and Utilities) of this FEIS for a discussion of storm water runoff management.

The following comments were received at the November 29, 1994, Public Hearing held at North Charleston City Hall.

- 1) **COMMENT** - The DEIS needs to be more user-friendly. It should also include a list of acronyms. (Mr. Bobby Knight)

RESPONSE - The DEIS is organized in a manner to provide easy access to various parts of the text relating to specific topics (e.g., land use, water quality, alternatives) and to provide a distinction between the description of the existing environment and the evaluation of environmental impacts and mitigation. The format of the DEIS is provided in the Table of Contents. The DEIS does include a list of acronyms (See Section 13)

- 2) **COMMENT** - Commentor expressed concern over use of local contractors or laid off workers "to the extent practical" for site cleanup. (Mr. Bobby Knight)

RESPONSE - This concern is addressed in Section 4.9 (Socio-economics) of the FEIS. See also written comment GCC 7.

- 3) **COMMENT** - Concern expressed about impacts of future industries which may not be mentioned in the DEIS. Since the reuse plan is conceptual, what if the actual reuse is different (e.g., reprocessing nuclear fuel, toxic waste incinerator, etc). (Mr. Bobby Knight)

RESPONSE - If the reuse plan is changed significant before the Navy's transfer of the property, or if a use is proposed in the

- 8) COMMENT - Concern that shifting the railyard closer to the river in Development Concept 3A to save wetland areas along Shipyard Creek would impact 130 acres of the Cooper River. Commentor wondered which was more valuable, the estuaries along the Cooper River or Shipyard Creek. (Mr. Milton Lombard)

RESPONSE - It should be noted that the discussion of wetland resources at the Base has been revised in Section 3.3 and 4.3 of this FEIS. It should also be noted that Concept 3A was generated in order to avoid SWMU 9 and SWMU 14, which will affect the implementability of redevelopment more than the wetlands. In addition, it should be noted that the Concept 3 affected about 80 acres of the Cooper River. While Concept 3A affects an additional 50 acres of the Cooper River, it avoids contaminated areas, wetlands, and potentially sensitive habitats.

The estuaries along the Cooper River and Shipyard Creek each provide different habitat. Due to nearly continuous dredging, the Cooper River in the vicinity of the Naval Base exhibits limited and highly disturbed benthic resources which minimizes its habitat value, particularly for benthic species. The Cooper River is more important for its migratory and transient fish species and commercial fisheries. Shipyard Creek on the other hand provides a more diverse estuarine habitat which exhibits regular flooding and drying. This allows for a more diverse species composition and provides suitable habitat for shellfish, benthic species, wading birds, and forage species.

- 9) COMMENT - Did the Navy consult with the Office of Ocean and Coastal Resource Management? Have they indicated a willingness to issue a permit for filling the Cooper River? It was suggested that the Navy submit an application for a permit to see if Alternative Scenario 3 could be implemented. (Mr. Milton Lombard)

RESPONSE - Yes, the Navy did consult with OCRM. OCRM comments are included in Appendix H as comments OCRM 1 to OCRM 16. Since the Navy is not proposing nor undertaking the action of redevelopment or construction of a cargo terminal, the Navy will not be applying for a Section 10 Permit or for OCRM approval. This will be the responsibility of the developer of the Cargo Terminal. It should be noted that both Development Concepts 3 and 3A involve some filling of the Cooper River and would require Section 10 permits from the Corps of Engineers. See Section 2.2.1 (Future Actions) of the FEIS.

- 10) COMMENT - What is the baseline for employment figures in the DEIS, 1989 or 1993? (Mr. Milton Lombard)

RESPONSE - 1993

- 11) COMMENT - Concerned with the discussion of the sewer system at the Base since it is an old system and centralized which complicates its use to support redevelopment. (Mr. Milton Lombard)

RESPONSE - The BEST committee evaluated the wastewater system in detail. The DEIS summarized these analyses and supplemented it with information from the most current Base Master Plan. It was determined that due to the age and condition of the sewer system at the Base, much of it would have to be replaced to support redevelopment. Detailed infrastructure plans and specifications would be prepared as redevelopment proceeds, and specific redevelopment proposals and needs are known. The existing system will continue to support reuse in the short term. Improvements to the infrastructure at the Base will be the responsibility of the Redevelopment Authority.

- 12) COMMENT - Was a cost/benefit analysis done on the alternatives to economic costs versus jobs created. Concern was expressed that the Preferred Plan would cost the most to implement while creating only a few more jobs than the other alternatives. (Mr. Milton Lombard)

RESPONSE - Comment noted. See written comment ML 1. See also similar comment by Mr. Lombard at the Chicora Neighborhood Center above.

- 13) COMMENT - Will the cargo terminal be constructed by building piers or by filling? Would it be a landfill operation? (Mr. Terry Joyce)

RESPONSE - The final design of the cargo terminal will be determined by the developer of the facility and would be based on more detailed engineering and design studies which would need to be conducted. The DEIS assumes that construction would be via piling rather than backfilling; however, this does not commit a developer to a particular construction method. The design of this cargo terminal will need to be reviewed and approved by the Corps of Engineers (Section 10 permit) and by the SCDHEC OCRM prior to construction, and may even warrant a separate EIS which would be prepared by the Redevelopment Authority or the developer of the facility. See written comments as submitted by the Corps of Engineers (ACE 1 to ACE 7), Office of Ocean and Coastal Resource Management (OCRM 1 to OCRM 16), Department of the Interior (DOI 4, DOI 40, DOI 78, DOI 100), the Redevelopment Authority (RDA 1 to RDA 6), and the State Ports Authority (SCSPA 1 to SCSPA 4).